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ABSTRACT

This document contains transcripts of papers and panel discussions of a workshop conducted in Texas on the integration of academic and vocational education. The following papers and sessions are included: "Integrated Curriculum and Performance-Based Education: A Strategy for Systemic Change" (Jerry D. Pepple); "Toward the Integration of Vocational and Academic Education: A Group Process"; "An Overview of Integrating Vocational and Academic Education" (Michelle Sarkees-Wircenski) "Texas Education Agency Symposium"; "Setting the Stage for Integration at the Local District Level" (Mary W. Hendrix); "Integrating Technology Education and General Education" (Cam O'Keefe and others); "Principles of Technology: The Marriage of Academic and Vocational Education at Leander High School" (Mark Kincaid); "Physics-Technology Integration" (Tony Bertucci); "Mathematics Skills Meeting Vocational Needs" (Don Westbrook, Sherri Frost); "Developing Integrated Curricula" (Jerry Wircenski); "Evaluation of Programs that Integrate Vocational and Academic Education" (Jerome T. Kapes); "8th Grade Pre-Vocational Program for At-Risk Students" (Dianne Petty, Lolly Flores); "Integration of Academics and Vocational Education 'West of the Pecos Style'" (Steve Forsythe); "Incorporating Language Arts into Vocational Classrooms" (Debbie Johnson, Rebecca Miller); and "Closing Remarks" (Patricia S. Lynch). Also included in the report are a summary of the Texas State Board of Education Long-Range Plan, the workshop evaluation, a list of participants, and 46 references. (KC)

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# Integrating Academic and Vocational Education

## Workshop Proceedings

April 18-19, 1991

Marriott at the Capitol
Austin, Texas

Compiled by

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Research Associate

and

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U.S. DEPARTMENT OF EDUCATION
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## About the Workshop

This workshop was conducted as part of a Texas Education Agency funded project entitled *Vocational and General Education Personnel Training*. The project was designed to address the current issues of the integration of vocational and academic education, and one of the objectives was to conduct a statewide workshop on integrating academic and vocational education. Superintendents in all school districts in Texas were sent letters informing them of the workshop and asking them to provide the Vocational Special Needs Program at Texas A&M University with names of interested persons within their district. Each district was encouraged to send a team of educators, representing both vocational and academic education. The workshop was designed to provide some information regarding research in the area of integrating academic and vocational education and some examples of ways schools in Texas were integrating the two. It was hoped that then the teams could return to their districts and begin to implement some integration strategies there. What follows are the proceedings from the workshop.

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We would also like to thank the others, in addition to our advisory committee, who provided their services at the workshop and helped ensure its success: *Laurel Flanagan*, Spring ISD; *Dinnah Funderberg*, Texas A&M University; *Rick Hernandez*, Texas A&M University; *Neil Jeter*, Texas Education Agency; *Linda Patton*, Texas A&M University; and *Rae Wyatt*, Spring ISD.

# Foreword

With the reauthorization of the Carl Perkins Vocational Education Act, there is a focus on integrating academic and vocational education. Educators realize that not only are both aspects of a student's education important, but that the integration of the two, with a coordinated effort, can increase the effectiveness of the student's education. A student entering a job not only needs to be able to understand the technical aspects of his or her job and perform the specific skills, but also to be able to write and read memos, to converse effectively with employers and co-workers, and to calculate his or her hours.

The *Integrating Academic and Vocational Education Workshop* was designed to address these issues. The proceedings of that workshop are presented here, arranged in order of their occurrence at the workshop. Each session is identified by a cover page and notes, handouts, and/or overheads presented by each speaker are presented.

The first session was a keynote address by *Jerry Pepple* from the University of Illinois. That was followed by a group session, involving the nominal group technique, which generated a list of barriers to integration as well as solutions to these barriers.

The third session was another keynote address by *Michelle Sarkees-Wircenski* from the University of North Texas. That was followed by a Texas Education Agency Symposium, with *Grace Grimes* and *Robert Patterson* as speakers. The next ten topics were presented simultaneously in round table sessions.

Also included in this handbook are a summary of the workshop evaluation and appendices with information pertinent to the workshop.

# THE VISION*

The State Board of Education of Texas envisions a state whose first priority is its children. The vision of this Board of Education, therefore, is limited neither to schools as they currently exist nor to education.

The society in which Texas' children develop into Texas' leaders must provide enrichment and nourishment for their minds and bodies, high expectations for their future potential, and recognition of their current demands. Such a society will ensure that infant and child care are secure and attentive and that parents have the resources to meet their children's intellectual, physical, and social needs.

Texas schools will welcome children who, because of their experiences prior to entering school, are ready to learn. They will provide programs to parents who need literacy, job training, and parenting skills. They will be located on campuses, community centers, and job sites. They will be equipped with the technology that promotes effective learning and efficient management.

The public education system will take the lead in ensuring coordination and provision of the services that children and their families need in order for children to succeed in school. Schools will not succeed, however, if they act alone. Attaining this vision demands the concerted and coordinated dedication not only of educators but also of all of those who interact with children and who share responsibility for their growth and welfare. These include parents, teachers, and other direct care providers, members of the health care, human services, and judicial and legal systems at the local, state, and federal levels, as well a neighbors, employers, and other community and business members.

This theme of mutual effort on behalf of children pervades this Long-Range Plan. Public education is responsible--and will be held accountable--for providing the multiple appropriate instructional environments, effective materials, qualified staff, and suitable facilities that yield student achievement. The State Board of Education recognizes, however, that too many children enter school less ready to learn and less healthy than their peers. Too many children suffer from deprivation and low expectations which jeopardize their ability to achieve. The need for common effort is great.

With this effort, the Texas public education system will be one in which:

- Schools vary widely in practice, site, and curriculum delivery in response to the needs of their students.
- Teachers have the responsibility, training, and the resources to guide developmentally appropriate instruction efficiently.
- Performance, rather than process, determines advancement.
- Performance and socioeconomic status are unrelated.
- Adults can enhance their job and life skills.

The future of Texas--social, economic, and environmental--depends upon the quality of its educational system. The quality of our lives and that of our children requires the strongest possible commitment to this future. The State Board of Education rallies all Texans to join in being advocates on behalf of our children.

*From *Quality, Equity, Accountability: Texas State Board of Education Long-Range Plan for Public Education, 1991-1995*

# EXECUTIVE SUMMARY OF QUALITY, EQUITY, ACCOUNTABILITY: TEXAS STATE BOARD OF EDUCATION LONG-RANGE PLAN FOR PUBLIC EDUCATION, 1991-1995*

## Summary of Goals

### Goal 1: Student Learning. All Students will achieve their full educational potential.

Goal 1 emphasizes closing the achievement gap between populations of students, eliminating the gap between students' performance and their potential, and reducing the dropout rate through a variety of means. State actions include raising expectations, eliminating legal and regulatory barriers to student progress, expanding early childhood programs, and advocating integrated social services.

The key role of regional education service centers throughout the plan is to provide assistance to districts and campuses in meeting each goal. Suggested district and campus actions include expanding early childhood and before- and after-school programs, coordinating ancillary services with communities, and mainstreaming special education students.

### Goal 2: Curriculum and Programs. A well-balanced and appropriate curriculum will be provided to all students.

Goal 2 focuses on meeting the curricular and program needs of *all* students, regardless of learning style, level of performance, or special abilities or needs. This goal also addresses lengthened school day and year. Key state actions include reviewing and revising the curriculum, providing incentives for a lengthened school day and year, encouraging alternative school configurations, and attending to special programs.

districts and campuses are encouraged to focus on instruction, to integrate technology, and to adapt the state curriculum for local needs.

### Goal 3: Personnel. Qualified and effective personnel will be attracted and retained.

Goal 3 focuses on preparation of all personnel, recruitment and retention of teachers, and on enhancing the responsibility of campus staff. State actions include monitoring certification programs, implementing teacher and administrator evaluation systems, increasing teacher salaries, and providing other incentives for recruitment and retention.

Districts and campuses are encouraged to involve teachers in decision-making, to help teachers vary instruction and provide other staff development, and to implement the induction year program. Colleges and universities are urged to prepare prospective teachers and administrators to help students master the state curriculum and to share in campus decision-making.

### Goal 4: Organization and Management. The organization and management of all levels of the educational system will be productive, efficient, and accountable.

Goal 4 emphasizes management and performance of the educational system and accountability. State actions focus on performance-based accreditation, coordinated planning, implementation of the Public Education Information Management System, other services to support and improve local management, and methods for increasing local authority. Suggested district and campus actions include developing school-based decision-making councils, applying for waivers to rules and laws, improving curriculum and services in small districts, and training school board members.

### Goal 5: Finance. The financing of public education will be adequate, equitable, and efficient.

Goal 5 focuses on adequacy, equity, and efficiency of funding for a quality education program, including funding necessary variations in programs and providing funds for facilities. In addition to increased funding, State Actions support funding incentives to encourage efficiency, coordination of federal, state, and local funds, and maintenance of the integrity of the Permanent School Fund. Districts and campuses are encouraged to place priority on efficient use of funds for instructional quality and student progress.

### Goal 6: Parent Responsibility. Parents will be full partners in the education of their children.

Goal 6 encourages parents to take responsibility for their children's education and provides for parenting education and adult literacy. State actions call for a plan for parental involvement and coordinating state services for parent training and adult literacy. Districts and campuses are asked to involve parents and children in school decision-making, offer adult literacy and parenting programs, provide or locate extended-day child care services, and train staff in involving diverse groups of parents. Parents are encouraged to convey the expectation that their children can learn and to take responsibility for encouraging their children's and their own continuing education.

### Goal 7: Community and Business Partnerships. Businesses and other members of the community will be partners in the improvement of schools.

Goal 7 encourages cooperation with the private sector and community organizations., State actions encourage reciprocity between schools and the private sector, programs for out-of-school youth and adults, and partnerships between schools and community-based organizations. District and campus actions conform to these. The private sector is asked to encourage school-age employees to stay in school, to participate in educational planning, and to provide employees whoa re parents with release time to participate in parent responsibility activities. Community-based organizations are encouraged to coordinate with school activities for students and out-of-school youth.

### Goal 8: Research, Development, and Evaluation: Instruction and administration will be improved through research that identifies creative and effective methods.

Goal 8 calls for a state research agenda and for applying research and technology to improve instruction and management. State actions address a research plan and clearinghouse, cooperative and longitudinal research, and implementation of technology. Districts and campuses are encouraged to examine research and to develop innovative practices. Institutions of higher education are urged to conduct cooperative research with schools and to incorporate research findings into the preparation of prospective educators.

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**Goal 9: Communications. Communications among all public education interests will be consistent, timely, and effective.**

Goal 9 focuses on conveying policies and information on school, campus, and district performance, soliciting perspectives from the field, and recognizing achievements. State actions include expanding telecommunications and disseminating information on the performance of the educational system. Districts and campuses are asked to follow suit and to expand local recognition programs.

*From *Quality, Equity, Accountability: Texas State Board of Education Long-Range Plan for Public Education, 1991-1995*

# Integrated Curriculum and Performance-Based Education: A Strategy for Systemic Change

*Jerry D. Pepple*
University of Illinois

General Session

# INTEGRATED CURRICULUM AND PERFORMANCE-BASED EDUCATION - A STRATEGY FOR SYSTEMIC CHANGE

**APRIL 18, 1991**

**Dr. Jerry D. Pepple**

**University of Illinois**

**Department of Curriculum and Instruction**

**Champaign, Illinois**

**1991 Workshop on Integrating**
**Academic and Vocational Education**

**Austin, Texas**

(This presentation is based on an original paper presented by Drs. Dale A. Law and Jerry D. Pepple and presented at a conference on Integration at Greeley, Colorado, November 1990.)

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# INTEGRATED CURRICULUM AND PERFORMANCE-BASED EDUCTION - A STRATEGY FOR SYSTEMIC CHANGE

## Integration of Curriculum

The U.S. Secretary of Education, speaking at the School to Work Transition Conference last May stated that integrating academic and vocational studies is a key "for all students". Noting current programs around the nation linking academic skills and vocational education, he further stated "early results suggest that far from being mutually exclusive, job training and academics can be mutually reinforcing. . . A new focus on the application of mathematics and scientific principles is a promising approach to both meeting the education goals and improving school-to-work transitions."

A recent joint policy statement by the National School Boards Association and the National Association of State Boards of Education stated that schools should broaden vocational education to include stronger academics and that broader vocational education curricula should reach all students, not just those in job training. The statement urged local educators to consider the changing job market, modern work technologies and new teaching methods.

President Bush, in an article published in Industrial Education (1990, March) said "I'd like to encourage you to think about ways to integrate vocational education with your schools traditional curriculum. . . ."

In addition to the government, politicians and business and industry supporting the concept of integrating academic and vocational education, other interest groups are also supporting the concept to some degree or another. Not, I might add, all for the same reasons.

Parents support the concept because they want the best possible education for their child so he/she can get into the best college and then succeed in a satisfying high paying job.

Academic teachers as represented by their national spokespersons and associations such as the National Council of Teachers of Mathematics are interested in using new procedures in teaching math so students can readily see the relationship between mathematical concepts and their application in the real world. Project 2061: Science for All Americans (1989) proposes new curricula for science, math and technology that are different from today's school curricula in two ways: 1) boundaries between traditional subject matter categories are softened and connections are emphasized; and 2) the amount of detail that students are expected to retain is considerably less than in traditional science, mathematics, and technology courses.

Charles Benson (1989), Director for the National Center for Research in Vocational Education, in testimony before the Senate Subcommittee on Education, Arts and Humanities in support of the new Carl Perkins Vocational Education Act reported that "the case for integration stands on three main-and somewhat interrelated-arguments: **economic necessity; findings from the field of cognitive science; and social justice.**"

In terms of economic necessity, fundamental changes are occurring in the nature and structure of work, reducing the number of the very lowest level jobs and increasing skill demands at all levels. The proportion of jobs requiring a thinking, learning, analytical worker is rising and is expected to continue to rise, but the proportion of jobs based on repetitive acts, easily learned by imitation, is falling. Employees must have a greater ability to work in a more uncertain and non-routine environment and to interact with a wider variety of individuals.

To illustrate he used the example of welding. Welding is a traditional vocational subject. Not many academic teachers would claim welding in their realm of responsibility. But for a career in welding, he proposes that "students are likely to need computer literacy, metallurgy, blueprint reading, heat control, distortion control, as well as knowledge of new and emerging welding techniques, such as robotic welding, laser beam welding, plasma arc welding, arc brazing, resistance brazing, laser beam cutting, carbon arc cutting, etc. These new knowledge areas and new kinds of skills appear to require enhanced academic background and an increase in process comprehension." (J. C. Papritan, "Trends in Welding Training in Vocational Education: The Curriculum, Parts I and II," Welding Journal, April/May, 1985) Students enrolled in agricultural education programs learn more than raising animals and planting seed. They study the total farm or agribusiness - animal husbandry, finance, management, marketing, safety and health - they investigate the total operation and not just one narrow occupational area.

From the field of cognitive Science, he reports that "Recent work by cognitive scientists suggest that for large numbers of people, possibly a majority of the student population, 'theoretical ideas' -- meaning reasoning power, skills in problem solving, skills in knowing how to learn in the workplace, the ability to plan, to anticipate and avoid difficulties in productive processes -- are taught most effectively when they are taught in a practical context."

He further reports that

> ". . . **learning by doing** is an effective instructional strategy over a wider span of the measured ability spectrum than is traditional academic instruction, based on lecture and text. Teaching theory in a practical context appears to offer much transferability from the study of instructional modules to the solving of problems in the work place."

Cognitive scientists are now saying that for most people effective learning requires a context that matters to them. In particular, most learning (including learning in the workplace) takes place in ways quite different from the form it takes in schools: it takes place in groups and often requires cooperation, while most school-based learning is an individual activity; it relies on using both simple and complex tools, whereas school-based learning emphasizes thinking that is relatively independent of tools; and most importantly schools emphasize relatively abstract forms of learning disconnected from the "real worlds" of work, family and community -- as schools themselves are disconnected from these worlds -- rather than connecting learning to events, people, and objects that have some meaning to them, like the tasks required on the job, the chores necessary around the home, or the activities connected to lives as community members and citizens (Resnick, 1987; Raizen, 1989).

Benson (1989) suggests that integration of academic and vocational education "is the best shot we have" for overcoming the form of social injustice that occurs by tracking students.

The division or separation between academic and vocational education did not exist in the early period of education in this country. During most of the nineteenth century, little specific vocational training was found in the public schools. there was a general belief that all students of every vocational ambition should learn the same subjects.

The manual training movement of the 1880's developed a set of graduated exercises in woodwork and metal work, not to give students the specific skills necessary for immediate employment but to train them in the uses of tools and the manipulation of materials, to round out their eduction, to "train the mind by training the hand" (Grubb, 1990).

Russell (1938), in the report of a committee appointed by President Roosevelt, criticized vocational education for promoting a narrow conception of vocational education with overly specific training and for encouraging a dual structure segregating vocational education from academic education.

Reports in 1963 and in 1968 also criticized the narrow approach practiced by vocational eduction and pointed to a need to broaden its scope (Grubb, 1978). The recent passage of the reauthorization of the Carl Perkins Act was preceded by much discussion about the need to broaden vocational education and integrate it with academic education.

Keep in mind that nothing I've said at this conference will have any practical affect on education until it is acted upon locally. Kolberg (1990) stated "**This is a national problem that will be solved locally. . . .**" It's at the local level where the most exciting, innovative developments are occurring with regard to integrating the curriculum. Local schools are experimenting, often by trial and error, to determine what makes sense and what works for them and their students in the context of their resources, personnel, and labor markets.

To make integration work locally, a school district must have a vision of what schooling should be and a commitment to seeing that vision accomplished. There is an ancient proverb which says "**Where there is no vision, the people perish**" (Proverbs 29:18).

That proverb has application to the business of education today. In education, we have to have a vision, we have to have a philosophy about education, what it is, what it ought to be, what it can and can't do, who it can serve, how it can serve whom, what its end products (that is its graduates) should know and be able to do.

The vision conceptualized through integrating academic and vocational education is designed around the following observed benefits derived from integration:

-- increased quality of vocational instruction through greater use of academic material and of applied academic courses;

-- increased quality of academic instruction through increased use of applications and problem-oriented approaches to teaching;

-- upgraded curriculum through the replacement of diluted academic (general) courses with more rigorous applied academic courses;

-- improved "coherence" in the sequencing of four year programs of study as a result of vocational teachers, academic teachers, and counselors cooperatively defining such sequences;

-- improved integration and increased understanding between academic and vocational teachers as a result of working together on new curricula;

- decreased segregation of academic and vocational students through the development of courses and programs which eliminate the divisions between academic and vocational subjects;
- increased enthusiasm of teachers for teaching and students for learning.

Do these observed benefits to an integrated curriculum fit into your vision of what education should be and do in your school district? Whatever your vision, you then develop goals and objectives, and a plan of action steps to help you get there. I'm sure your school district has a mission statement and goals for education and a plan for reaching those goals. But the question that I would ask you is simply this: **When did you last revise it?** In other words, how old is it? Is it still relevant in todays society? Does it produce graduates who can go on to college or immediately take their place in the world of work as knowledgeable, skillful employees or students?

Commitment to your vision is extremely important. There are a lot of barriers to making change in education. Innovation causes resistance to stiffen, defenses to set in, opposition to form. It often takes repeated attempts, endless demonstrations and persistence before your new ideas will be accepted. The point is that everyone in your district is not likely to jump on the bandwagon and think this is the greatest idea to come along.

Benson's (1989) testimony identified seven barriers to integrating academic and vocational education. These barriers that you will need to overcome include:

- lack of well-established models of integration
- new demands on teacher time
- lack of resources for staff development
- the need for consistent support of efforts at integration
- inadequate funding and leadership in schools targeted by federal policy
- the absence of appropriate instruments of assessment
- an incomplete grounding in cognitive science

As educators, we need to keep in mind that integrating academic and vocational education is not an end in itself. But it does provide a vision of improving education for all students and making education real. It is an opportunity to move in the direction of responding to concerns highlighted in the Unfinished Agenda report by the National Commission on Secondary Vocational Education (1985) which states "What is really required today are programs and experiences that **bridge the gap between the so-called academic and vocational courses."**

There are several models of integration to choose from, and you may even develop another one, or certainly use a combination of elements from the various models as you seek to design a program that fits your situation for your students. The next section of this paper will focus on specific models of integration.

## A Way to Think About Integration: Some Possible Models

Generally, researchers, policy makers, vocational teachers, academic teachers, business and industry leaders, and a host of others are supporting various efforts of integration. Interestingly, each of these groups has its own reasons for wanting to integrate programs. However, as stated earlier one can not think about integration as an end but as a means to an end: **Improving some serious deficiencies in the American School System.** Recently NCRVE researchers (Grubb, 1990) have attempted to define some of these efforts of integration as "models" which can be evaluated and/or modified to better fit local needs and conditions. At this time there is still a great deal of experimentation going on across the country and a paucity of hard data about integration. Grubb and Plihal use these models because, in their view, they have each changed educational practices in some manor or degree and not just renamed an existing practice.

### Model 1: Incorporating academic competencies into vocational courses

a. Probably simplest form of integration

b. Relabeling of the informal reinforcement of basic academic skills in vocational classes.

c. Using develop off-the-shelf curriculum materials which identify academic competencies.

d. Academic competencies stressed are generally simple or lower level.

e. Does nothing to change the separation between academic and vocational teachers, programs and students.

f. Taught by vocational teachers.

### Model 2: Combining academic and vocational teachers

a. Academic teachers initiate the teaching of academic competencies in vocational programs.

b. Assigning academic teachers to AVC part or full time to work with vocational teacher or team teaching.

c. Strength of this model is in collaboration.

d. Presence of academic teacher gives status to academic skills.

e. Most academic content is remedial.

### Model 3: Making academic curriculum more vocationally relevant

a. Academic teachers incorporate vocational examples into their courses.

b. Some what like the "career ed" movement.

c. More common approach is to introduce specific new courses "applied academics".

d. Some times used to substitute for lower level academic courses.

e. Used as electives with no courses dropped from the course offerings.

f. Most popular form of integration.

g. Unless linked to vocational programs and teachers true integration may not take place.

**Model 4: Modifying academic and vocational education - curriculum "alignment"**

a. Changes the content of both academic and vocational courses.

b. Coordinates existing teachers and courses.

c. Relies on locally developed curricula or modified "off-the-shelf" curricula.

d. Incorporates elements from Models 2 and 3.

e. Many teachers use Applied Academic materials.

f. Teacher collaboration and student mixing.

g. Cooperative learning.

**Model 5: Academy model**

a. Operate as schools within schools.

b. Teacher collaboration.

c. Student groups work with teacher groups.

d. Business, industry relationships.

e. Motivate potential drop outs.

f. Does not reduce tracking of students.

**Model 6: Replacing conventional departments with occupational clusters**

a. Replace conventional departments.

b. Departments organized along occupational lines.

c. Career-cluster departments recommends specific course sequence.

d. Promotes teacher collaboration.

e. Reduces "turfism".

f. Expanded Academy Model.

g. Reduces tracking of students.

**Model 7: Single-occupation high schools**

a. Similar to academies except occupation emphasis is school-wide.

b. Academic instruction is more vocational.

c. Reduces student tracking.

d. Promotes opportunities for teacher collaboration.

**Model 8: Electing career paths or occupational majors**

a. Use occupational cluster as in Model 7 but still have conventional departments.

b. Students elect a "career path" to follow.

c. Integrate career-related information into academic subjects.

d. Reduces "curriculum cafeteria" approach.

These eight models are still being studied and others will probably emerge. Before school officials buy into some reform effort such as integration, there are some factors which need careful consideration and study by all stakeholders. Policy makers must determine, through some procedure, the indicators of program quality that they want to use to evaluate their strengths, successes, and areas of concern. In working with policy makers at various educational institutions, several measures of success have been identified:

a. Increased scores on standardized tests in mathematics, science, and language arts;

b. Increased selection of upper level courses on the part of vocational students;

c. Increased post-secondary enrollment;

d. Reducted unemployment of graduates;

e. Increased wage earning capacity and job quality;

f. Increased employer satisfaction; and

g. Decreased drop-out rates.

Identifying and framing these outcomes will determine what evaluation data should be collected. These outcomes will also determine which, if any, integration model should be promoted. Possible factors which will need some degree of consideration by stakeholders are:

a. Education Objectives

b. Curriculum Design

c. Textbooks

d. Teachers and Staffing Patterns

e. Staff Development

f. Student Assignment

g. Resource and Time Allocation

h. Testing

i. Organizational Structure

k. Incentives

The degree of consideration for each of these factors will be guided by state and local policy. This will require involvement of all stakeholders if we are to make progress in school improvement.

## Assessing Performance-Based Learning

At the education summit in Charlottesville, the President and the Governors declared that "the time has come. . . to establish clear national performance goals, goals that will make us internationally competitive" (National Goals for Education, 1990).

The statement was made that

> "education is central to our quality of life. It's at the heart of our economic strength and security, our creativity in the arts and letters, our invention in the sciences, and the perpetuation of our cultural values. Today, a new standard for an educated citizenry is required. . . all of our people, not just a few, must be able to think for a living, adapt to changing environments, and to understand the world around them."

Goal 3 of the 6 goals established at this conference states: "By the year 2000, American students will leave grades 4, 8, and 12 having demonstrated competency in challenging subject matter including English, mathematics, science, history, and geography; and **every school in America will ensure that all students learn to use their minds well**, so they may be prepared for responsible citizenship, further learning, and productive employment in our modern economy."

The report calls for reorienting schools so they focus on results, not on procedures. A restructuring of education that will work toward guaranteeing that all students. . . acquire the knowledge and skills necessary to succeed in a changing economy. What they are really saying is-we want graduates and employees who can **THINK**! Individuals who know the basics, but who can also **solve problems**, look at a set of factors and make a decision. Individuals who can **transfer** what they have learned from one circumstance to another. This will necessitate the teaching of less detail, but more understanding, more relationships, more cooperative efforts. As educators, we need to recognize that our students can't learn everything. There is an explosion of knowledge! Just too much for anyone to know. When you think about it, any one of us concentrates on, and uses, only a small fraction of all the knowledge available. I believe that we are doing a disservice to our young people by teaching them a lot of specific data and details that will soon be out-of-date, or even if it isn't out of date, will soon be forgotten when school is out. Technological change is occurring so rapidly that much of what we learn today will not be needed in 3 or 5 or 10 years. We ought to be teaching young people how to find the information they need and then how to use the information they have found. We should be teaching young people **how to learn**, and how to think through a given set of circumstances. How to transfer what they know from one situation to another.

Integration of academic and vocational education has peoples' attention and is focusing on these ideas.

In terms of assessment, the national report says "what students need to know must be defined". There is no lack of individuals and organizations willing, at least informally, to help define what students need to know. Everyone seems to have an opinion.

Carnevale, Gainer, and Meltzer (1989), in a summary of research conducted under a joint project of the American Society for Training and Development and the U.S. Dept. of Labor titled Workplace Basics: The Skills Employers Want report that employers say the most important skills for any employee are the three Rs- reading, writing and arithmetic. And increasingly, employers are telling the media they will train new employees if they have these three basics. But, they report that if you probe a little further, you find that employers want good basic academic skills and much more.

> "Employers want employees who can learn the particular skills of an available job-who have **learned how to learn**. They want listening skills and good oral communication skills, "employees who can think on their feet **(problem solving)** and who can come up with innovative solutions **(creative thinking)**."
>
> "Employers want employees who have pride in themselves and their potential to be successful **(self-esteem)**; who know how to get things done **(goal setting/motivation)**; and who have some sense of the skills needed to perform well in the workplace **(personal and career development)**."
>
> "Employers want employees who can get along with customers, suppliers, or coworkers **(interpersonal and negotiation skills)**; who can work with others to achieve a goal **(teamwork)**; who have some sense of where the organization is headed and what they must do to make a contribution **(organizational effectiveness)**; and who can assume responsibility and motivate coworkers when necessary **(leadership)**."

BEST COPY AVAILABLF

Harms (1981) has proposed several new and dramatic changes for science programs at the elementary, middle, and high school levelswhich should address some of the above concerns. At the elementary level, science needs to be considered as a "basic" with assistance from local support groups to provide training, materials, and organization as needed. For example, the use of science "kits" or "tubs" is gaining in popularity among elementary teachers. This method is not new, it has been around for about 25 years. However, the science tubs used today are more "teacher friendly". But the problem of resupplying and maintaining them is still a problem. Dale Law and I are currently working on a research project to try and look at this problem (K-6 Curriculum Development, 1991). Over the last couple of years our research team has developed 10 new science tubs (grades 4-6) which also emphasize careers in agriculture:

1. Agriculture Measures Up: Using Mathematics in Agriculture
2. Agriculture Renews Our Planet: Growing Energy for the Future
3. Animals in Agriculture: Their Growth and Development
4. Dairy Delights: Good Nutrition from Milk
5. Eggciting Experiments: Chick Incubation and Embryology
6. Growing Better Everyday: Using Genetics to Improve Agriculture
7. Insects: Agriculture's Friends or Foes
8. Probing Our Soils: Getting to the Roots of Agriculture
9. Protein Providers: The Superb Soybean
10. Rain or Shine: Weather's Effect of Agriculture

We are providing inservice workshops to elementary teachers on how to use these new biological science tubs. We have also been talking with other groups, such as secondary agricultural education teachers, ag.-in-the-classroom representatives, and regional superintendents, about maintaining the tubs for the elementary teachers. The reception so far is very encouraging and they seem anxious to get started.

Harms suggests that the science curriculum at the middle school and junior high school level shift to address issues and topics related to personal, societal and career choice needs. Decision-making and problem-solving skills would receive increased emphasis. The secondary curriculum would also shift to a science literacy context. Topics would be presented in a personal and societal context. In addition, new courses need to help students cope with an increasingly technological world stressing real-world applications.

The common theme weaving through the reform reports is the importance of applications. We need to develop strategies thatconnect mathematics and science problems to real-world issues - both personal and societal. The shift toward teaching the full spectrum of cognitive levels is another thread in the reform fabric. The teaching of isolated, discrete facts and principles is no longer adequate - students will need to demonstrate their understanding of the science, mathematics, and technology concepts through some means other than pencil and paper tests.

Wirt (1991) encourages the states to provide the needed leadership in developing and/or assisting local districts in designing performance-based assessment strategies. Many states are in fact using performance-based learning and assessment strategies as tools to promote school reform in general education. The strategies and action plans being formulated to promote performance-based learning and assessment in general education programs are not that different from those which are currently used by vocational, music, and art teachers.

The process is very generic when developing performance-based tests. The following steps are generally included:

a. Identify information/skills to be tested.

b. Determine if process, product, or both are to be assessed.

c. Prepare draft of assessment items

    1. process - critical steps
    2. product - desirable characteristics.

d. Determine rating scale

e. Determine acceptable score for mastery.

Through various integration efforts, such as having faculty across program areas to focus on the school-wide performance-based outcomes, which have been identified at the state and/or local level, much more progress can be made than having each discipline area working in isolation. There are school districts and states around the nation which are emerging as leaders in promoting performance-based learning - but so far these tend to be isolated groups and not organized into a large scale coordinated reform efforts. State and federal governments along with business and industry groups can be the glue to make this a cohesive and systemic reform plan. A recent report published by Allstate (1989) stated the following:

> "Yet, despite the fact that everyone profits from a better school system, few communities have launched comprehensive efforts to improve education - even though the critism and questioning of America's schools have become widespread in recent years.
>
> What's been lacking... is a coordinated approach; a plan that provides for ongoing cooperation among education, business, and the community as a whole.
>
> ...they concluded improving education should not be left solely to educators and executives. If the system serves the community as a whole, then the community must help the system understand its needs and meet its objectives.
>
> Hence,this report...outlines a mechanism for generating that kind of community involvement and support."

Business and industry groups are pursuing active ongoing partnerships education, business, and the whole community. They want to share ideas and resources to bring to fruitation the communities educational vision. For example, grants to the Learning Research and Development Center, University of Pittsburgh and the National Center on

Education and the Economy have been awarded over $1 million dollars each to develop and produce assessments which use, (a) performance examinations, (b) projects, and (c) portfolios. These are intended to be used as national assessments on a voluntary basis by local school districts. The funding for this effort is provided by the private sector. Their interest is to develop an assessment strategy which measures the students' ability to think and apply their knowledge to workplace problems (Workforce Development Strategies, 1991).

The Educational Testing Service (ETS) is securing funding to work with the Center for Occupational Research and Development (CORD) and the Agency for Instructional Technology (AIT) to develop performance-based assessments. Their efforts are focusing around the concepts taught in the Applied Academic Curricula. Again, the desire is to develop something more than a pencil and paper instrument. Recent research (Pepple, Law, and Valdes, 1990) indicates that these materials are accepted by many academic and vocational teachers and are being widely used in both areas for integration and performance-based learning activities, it seemed appropriate to develop performance-based assessments which can be made available to local districts.

Many local districts are currently meeting to develop their own performance-based assessments which they need for local goal assessment plans and school improvement plans. The schools are being encouraged to work with teachers across-the-board when developing their assessment strategies. Teachers are being encouraged to compare their curriculum with each others to identify where important skills and knowledge concepts are being taught and reinforced. Many times teachers are amazed at what is actually taught in other program areas and quickly see ways to align their content and share resources.

## Preservice and Teacher Preparation

Pipho (1991) reported on a study conducted by the Education Commission of States (ECS) which attempted to get a measure of the progress states are making in educational reform. Two of the factors they looked at were obstacles and emerging strategies which are being proposed and debated. The obstacles identified were:

a. Lack of clear, widely accepted, and compelling vision for reform;

b. Inadequate measures of progress in student learning and system reform;

c. Doubt among people in the trenches about whether there is a deep, long-term commitment to change;

d. Lack of support for innovators and risk-takers;

e. Reform efforts that do not easily transfer from pilot sites to the entire state;

f. Lack of coordination between approaches to reform, which sends inconsistent messages to school leaders and paralyzes their will to change;

g. Lack of people who know how to lead in reform settings; and

h. A large gap between advocates of reform and parents, the public and many educators.

Pipho also listed some strategies which were being tried out or proposed in the surveyed states. These included:

a. Restructuring state departments of education;

b. Moving toward integrated curricula;

c. Using alternative forms of assessment;

d. Decentralization and site-based management;

e. "Report cards" and other forms of public accountability;

f. Earlier childhood education assistance;

g. Interagency cooperation;

h. Funding formulas designed on a more equitable basis; and

i. Interventions or sanctions for failing districts.

It is obvious that universities will also need to change how they have been doing things in teacher education programs. Preservice programs must model and demonstrate how to effectively teach in a student-centered and activity-based learning environment. If change is to occur, beginning teachers must be aware of the reform strategies such as those listed above and how to cope with one or more of the barriers which could present.

Preservice programs need to develop strategies for working across discipline areas, i.e. academic teachers working with vocational teachers, mathematics teachers working with science teachers, etc. Currently, student teaching and methods courses still have students isolated from those in other discipline areas. Collaboration and cooperation among programs are not widely practiced - they may be mentioned, but students are not shown how to do it, or lead to believe that the schools that hire them expect this type professional training.

Many other exciting efforts are emerging at the university level. Colorado State University has a federal grant to develop and disseminate teacher education and counselor education modules for pre-service training programs. These materials will be pilot tested this fall in selected sites throughout the nation. Other efforts like those at Eastern Illinois University, University of Illinois, Texas A & M University, Ohio State University, Colorado State University, and a score of other colleges and universities have begun research in the areas integration, and performance-base learning and assessment. Another research project I am currently co-directing involves coordinating one or more vocational Tech/Prep grant projects with a state board (academic) Science Literacy grant. This will allow us to use a holistic approach to school reform - K - 14+ which is coordinated and supported by state and local stakeholders.

One more obstacle to performance-based education seems to be university admissions wanting to see course records and standardized test scores with student applications for admission. Again committees are working on this and some colleges are considering portfolios or other forms of records in place of course transcripts. Again, not everyone is up-to-speed on this reform effort. Communication and buy-in among all stakeholders takes time and compromise in the drafting of policies and strategies is a given.

Another factor is that most college teaching is very traditional in its delivery. This is changing in many colleges, especially among the professional schools who are responding to the changing business and industry climate. These curricular changes toward emphasizing "employability skills" are the same as those vocational and technical education programs are incorporating into their courses. Once key stakeholders agree that these outcomes are the same for all students, educational reform should, for the first time be coordinated and supported across school discipline areas, educational levels, state and local governments, and business and industry professionals.

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# INTEGRATED CURRICULUM AND PERFORMANCE-BASED EDUCATION — A STRATEGY FOR SYSTEMIC CHANGE

April 18, 1991

Dr. Jerry D. Pepple
University of Illinois
Department of Curriculum and Instruction
Champaign, Illinois

1991 Workshop on Integrating Academic and Vocational Education

Austin, Texas

(This presentation is based on an original paper presented by Drs. Dale A. Law and Jerry D. Pepple and presented at a conference on Integration at Greeley, Colorado, November 1990.)

# Eight Models of Integration

Model 1: Incorporating academic competencies into vocational courses

Model 2: Combining academic and vocational teachers

Model 3: Making academic curriculum more vocationally relevant

Model 4: modifying academic and vocational education — curriculum "alignment"

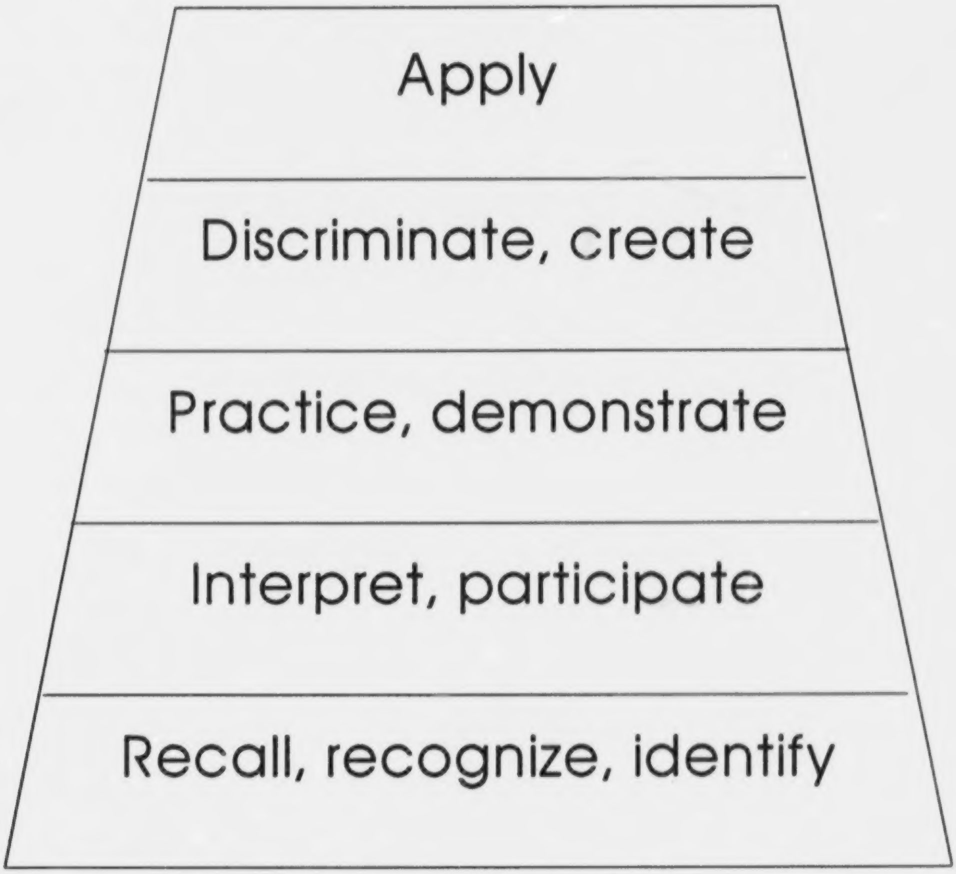
Model 5: Academy model

Model 6: Replacing conventional departments with occupational clusters

Model 7: Single-occupation high schools

Model 8: Electing career paths or occuptional majors

# Levels of Instruction for Applied Academics



Apply

Discriminate, create

Practice, demonstrate

Interpret, participate

Recall, recognize, identify

*Based on Bloom's Taxonomy

"All employees will need to apply logical thinking to define problems, collect data, establish facts, and draw valid conclusions."
Judy Whipple, Briggs and Straton

# Workplace Basics
# The 7 Skills Groups

- Organizational Effectiveness/ Leadership
- Interpersonal Negotiation/Teamwork
- Self-Esteem/Goal Setting-Motivation/ Personal & Career Development
- Creative Thinking/Problem Solving
- Communication: Listening & Oral Communication
- 3 R's (Reading, Writing, Computation)
- Learning to Learn

# One Approach to Integration

**Pure Applied**

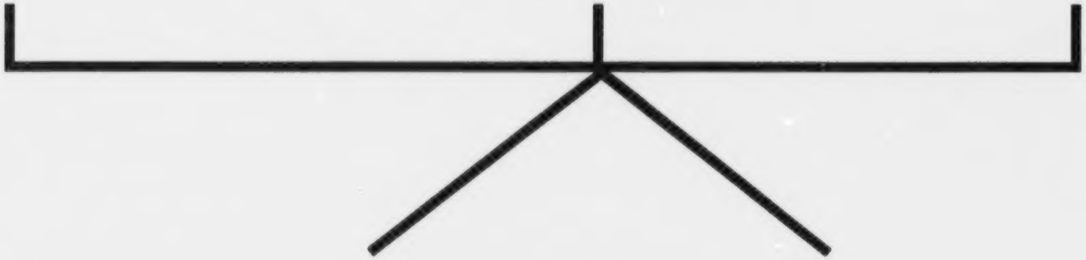
- can't generalize
- too fragmented
- lower-level learning
- based on job tasks
- no theory
- turns off many students

**Applied Academics**

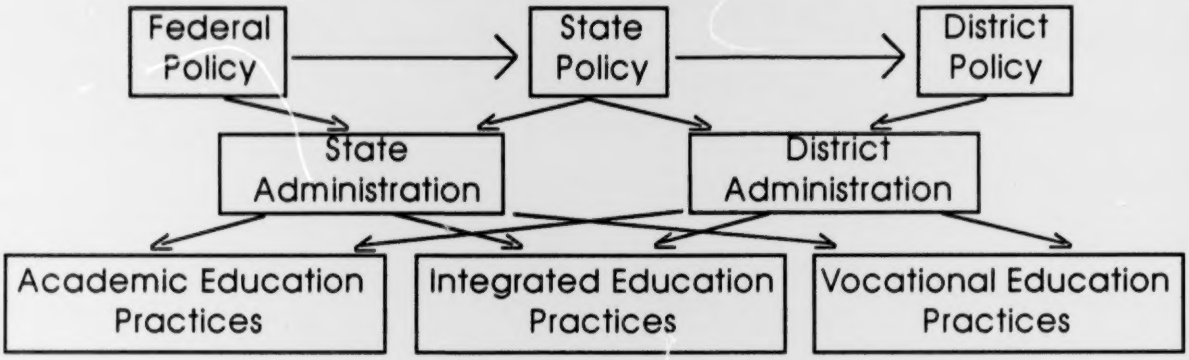
- student centered
- empowers the learner
- not remedial
- promotes cooperative learning/teaching
- uses holistic approach to education
- targets the middle 50% of student population

**Pure Academics**

- abstract
- turns off many students
- no applications
- repetitive drill
- authoritarian model



# Changing Policies and Administration to Integrate Academic and Vocational Education


Federal Policy
State Policy
District Policy
State Administration
District Administration
Academic Education Practices
Integrated Education Practices
Vocational Education Practices

| | |
|---|---|
| objectives → | ← objectives |
| curriculum → | ← curriculum |
| textbooks → | ← textbooks |
| teachers → | ← teachers |
| staff development → | ← staff development |
| student assignment → | ← student assignment |
| resources and time → | ← resources and time |
| testing → | ← testing |
| organization → | ← organization |
| incentives → | ← incentives |

Existing policy and administrative structures may be barriers to integrating academic and vocational education; removing barriers and creating new policies and administrative procedure may be necessary to integrate academic and vocational education.

*NCRVE Summer Conference on Integration*
*August, 1990*
*Berkeley, CA*

# Critical Questions

What is the purpose of schooling in your district?

How does integration fit into this purpose?

How are you measuring your outcomes?

How can integration enhance these results?

| Process | Product |
|---|---|
| collaboration<br>staff development<br>administrative commitment<br>teaching practices | |

*NCRVE Summer Conference on Integration*
*August, 1990*

*Berkeley, CA*

# Integration — Positives

- Better product/employable student
- Improved learning
- Program survival and recognition
- Cooperation/collaboration between vocational and academic education
- Staff desire and motivation

Pickens Tech
Aurora Public Schools
Aurora, Colorado

# Integration — Negatives

- Lack of time and resources
- Staff variables (expertise, attitudes, etc.)
- Student variables (boredom, time, etc.)
- Communication/coordination problems

Pickens Tech
Aurora Public Schools
Aurora, Colorado

# Developing Performance-Based Assessments

- Identify information/skills to be tested
- Determine if process, product, or both are to be assessed
- Prepare draft of assessment items
  - Process — critical steps
  - Product — desirable characteristics
- Determine rating/grading scale
- Determine acceptable score for mastery

# Strategies for Reform

- Restructuring state departments of education
- Moving toward integrated curricula
- Moving away from course requirements and requirements for specific amounts of seat time
- Using alternative forms of assessment (portfolios and performance assessments)
- Decentralization and site-based management (including the push for building professionals to share decision making with parents and community members)
- "Report cards" on the schools and other forms of public accountability
- Early childhood education assistance (both preschools and parent training)
- Interagency cooperation (e.g., cooperation with physical and mental health agencies)
- Funding formulas designed on a more equitable basis
- Interventions or sanctions for failing districts

# Obstacles to Reform

- Lack of a clear, widely accepted, and compelling vision for reform
- Inadequate measures of progress in student learning and system reform
- Doubt among people in the trenches about whether there is a deep, long-term commitment to change
- Lack of support for innovators and risk-takers
- Reform efforts that do not easily transfer from pilot sites to the entire state
- Lack of coordination between approaches to reform, which sends inconsistent messages to school leaders and paralyzes their will to change
- Lack of people who know how to lead in reform settings
- A large gap between advocates of reform and parents, the public, and many educators

# A Time for Leaders and Managers

- Must create an environment for diverse groups to come together and address problems
- Rewards and assessments must reflect new goals
- What is measured is what gets done
- Must take time to create infrastructure and environment to support systemic change
- Must begin to think through total process
- Use holistic approach
- Identify and remove barriers

1991 IMSA Leadership
Conference

# Accountability System — Four Measures of Quality

- Measures and standards must be clearly defined
- The numbers and measures and standards should be manageable
- The data for measuring performance indicators must be reasonably accurate, timely, and easy to measure
- Measures and standards information must be provided regularly enough to make it useful

Gareth Hoachlander
Vocational Education
Journal
Feb., 1991

# Elements for Integration

- Vision and commitment
- Consistent support
- New resources
- Autonomy for teachers
- Teacher training and retraining
- Sustained efforts

"There is no substitute for teachers and administrators sitting down and defining for themselves what problems they want to address, what they most want to accomplish and what resources they have to meet their goals."

W. Norton Grubb
Vocational Education
Journal
Feb., 1991

"The Perkins Act is an important step in redirecting vocational education and, ultimately, in restructuring our high schools for the 21st century."

Larry Rosenstock
PDK
Feb., 1991

"The performance measures are to include gains in the mastery of basic and more advanced academic skills, gains in competency in one or more occupational areas, plus retention in school or graduation and subsequent employment."

John Wirt
PDK
Feb., 1991

"This theme of 'integrating' academic and vocational education establishes a new direction in federal policy that is likely to grow in importance over time. The basic concept is that academic education and vocational education (or preparation for work) should grow out of and complement each other."

John Wirt
PDK
Feb., 1991

"Presentation and repetition help students do well on standardized tests and lower order skills, but they are generally ineffective as teaching strategies for long term learning, for higher-order thinking, and for versatile problem-solving."

Everybody Counts, 57

"We have drifted into a curriculum by default, a curriculum of minimum expectations that resists the changes needed to keep pace with the demands of preparing students for contemporary life."

John A. Dossey
Professor of Mathematics
Illinois State University

"We no longer need hundreds of people to do things by hand. We need people who can read digital read-outs, take statistics and numbers off machines, and write them in charts for further analysis."

Susan Hooker
Motorola

"Pursuing integration with academic education requires us to adopt a different view: That vocational education is a different way to learn the same academic concepts and skills that nonvocational students learn."

"A true integration requires nothing less than a full restructuring of high schools."

"With the new Perkins Act, the federal government has forged a powerful tool for re-creating schools."

Larry Rosenstock
PDK
Feb., 1991

"The primary goal of integrating academic and vocational education is to make the experience of applied vocational education more accessible to academic students at the same time that advanced academic courses are made more accessible to students concentrating in vocational education."

"The integration of academic and vocational education is a movement to reform not just vocational education but the entire secondary education curriculum."

Kenneth Gray
PDK
Feb., 1991

"We're already spending $117 million a year on training at Chrysler. But it doesn't all go to train workers how to run computers or robots or stamping presses. A big part of it goes to teach our people the three R's they didn't learn in school. In some of our plants, we have about 25 percent of our people reading at grade six or below, many of them functionally illiterate."

Lee Iacocca
1989 National Education
Association meeting

# Toward the Integration of Vocational and Academic Education: A Group Process

Facilitated by

*Jerry D. Pepple*
University of Illinois

General Session

72

# NOMINAL GROUP TECHNIQUE

NGT has six steps:

1. Presentation of the task to be accomplished.
2. Silent generation of ideas for ten minutes. Each participant is charged to silently write down the short phrases of statements which answer the question. The intent is to get as many answers as possible from all group members.
3. Round-robin recording of ideas. The participants are asked to read their ideas, one idea per person at a time. Each will be recorded, and numbered, on the master list. No discussion takes place. One-by-one, each participant either gives an idea or passes until all of the ideas generated by the group have been recorded. No editing of material and no evaluative comments are desired at this time. All participants are encouraged to "hitch-hike" on the ideas of others and add new ideas to the list. The point is to allow all members equal opportunity to contribute to the group.
4. Ideas clarified and discussed. This step is designed to promote a clear understanding of each idea. Over-lapping or similar ideas may be merged.
5. Valuation of relative importance of ideas. Each participant ranks the top five items out of all of those recorded. five points are given to the relatively most important idea; four points given to the second most important idea; three points go to the third most important; two points go to the fourth most important; one point is given to the fifth most important. The votes, on note cards, are counted and tallied for each item.
6. The process yields a list of answers, in order of ranking.

This final vote summarizes the NGT process: it provides a measure of the relative group consensus as to the value of the many ideas generated, it provides a sense of closure and accomplishment, and it documents the group judgement.

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Gresham, J. N. (1986). *Expressed satisfaction with the nominal group technique among change agents*. Dissertation, Texas A&M University.

Recycled Paper

# Barriers to Integrating Academic and Vocational Education

1. Turf, territorial issues
2. Time restratints
3. Coordination/cooperation
4. Graduation requirements/advanced diplomas; Carnegie units; no room in four year plan; graduation credits; new report card
5. Image of vocational education; labeling; vocational stigma; stereotypes; parent/community perception; prejudice
6. Ignorance between groups; lack of understanding and communication
7. Inservice time, time for teacher training
8. School board agreement
9. Priorities
10. Makes electives "not fun"
11. Community/parental involvement - understanding - ignorance - lack of understanding
12. Attitudes: counselors, apathy, business, parents, students, community
13. Traditional separation of all courses; separate inservice schedule; program stratification; division of students academic/vocational
14. Need to focus on future
15. No consensus of definition - vary among levels
16. Organizational funding structures; difference in funding, goals
17. National trends don't favor Vocational educaiton
18. No credit for applied courses - dual credit
19. Community pre-conceptions
20. No requirements except for Vocational education
21. TEA regulations (funding); federal legislation
22. Logistics; locations, physical separation; facility differences; isolation; existing school structure; building proximity
23. Site-based management
24. In rural area, breaking with tradition
25. Selling the "concept"
26. No guidelines, mandates, funding
27. Concept of college for everyone
28. Limited curriculum materials (integrated materials, applied materials)
29. Resistance to change; easier to stay same; apathy; teacher mind set; mistrust
30. Shortage of resources
31. Time and money for planning and developing programs
32. Overcrowded curriculum in academics
33. Vocational responsibility
34. Vocatinal educators think that they already do it
35. Lack of leadership, facilitators (national, state, and especially local); lack of initiative
36. Where does it begin - who starts it, and where?; lack of clear vision
37. Lack of knoowledge of our work force by academic teachers
38. Job security
39. Lowering of standards by academic teachers
40. Political issues/gaining consensus
41. Curriculum specialist in academic/lack of knowledge in vocational area
42. Raw material
43. Finger pointing

44. Different goals - elitism
45. Counselors; inadequate counseling; schedule/choices, can't do both, registration bias; registration bias to academic
46. Resource and facility managament
47. Teacher background
48. Staffing logistics and curriculum (cross-training)
49. Conference time between academic and vocational
50. Lack of knowledge of curriculum
51. Lack of models/integrated curriculum; lack of curriculum coordination
52. Lack of support from the top/leadership, administration, board, parents, teachers, counselors, community
53. Size of class loads
54. Wide range of entry-level academic abilities
55. Doesn't always fit essential elements
56. Out of date terminology - stigma about vocational education (students and teachers)
57. Limited knoweldge of academic teachers; lack of teacher know-how; knowing changes to make
58. Lack of good staff development; lack of staff development time
59. Scheduling problems (especially small schools)
60. Teacher philosophy about what an educated person is
61. Teacher preparation at college level
62. Assessment, non-compatitive testing to performance; mandated testing; teaching TAAS tests
63. Whole system is barrier (regulations, law restrict sharing)
64. Teacher preparation pre- and post-; certification; teacher preparation at college level
65. Concentrating resources on top students
66. Vocational teachers not good role model
67. Instructional arrangements
68. Mandates biased to academic
69. Vocational educators feel unqualified
70. Academic education feels vocational is unimportant
71. Vocational resents spending their time on academics

## Barriers Listed as Top Five

1. Community/parental involvement - support - understanding - ignorance - lack of understanding
2. Turf, territorial rights
3. Coordination/cooperation
4. Graduation requirements/advanced diploma
5. School board agreement
6. Attitudes: counselors, business, parents, students, community
7. Stereotypes, stigma, image, perception, apathy, tradition
8. Lack of organizational leadership/support - (national, state, and especially local); undefined responsibility
9. Community pre-conceptions
10. Organizational funding structure; TEA regualtions - funding
11. Distrust between teachers and lack of communication
12. Concept of college for everyone
13. Selling the "concept" - vocational education
14. Tracking issues

15. Resistance to change; no change
16. Lack of time/money for planning and developing; time for teacher training
17. Lack of school/community support; teacher support
18. Lack of articulation
19. Isolation; traditional separation
20. Planning time for academic and vocational teachers
21. Testing; assessment
22. System - regulations, laws
23. Teacher philosophies
24. Teacher preservice training, preparation
25. Lack of models integrated curriculum
26. Resources - time, space, funds, facilities

## Barriers Listed by Entire Group

1. Attitudes, vocational and academic - administration
2. Lack of organizational leadership, all levels
3. Community Preconceptions
4. Funding structure
5. Planning and development time
6. Lack of models
7. Time for teacher training
8. Resistance to change
9. Graduation credits
10. Advanced diploma
11. Fear issues - turf
12. Apathy
13. Curriculum
14. Counseling - inadequate
15. Articulation
16. No transfer of knowledge by students
17. Lack of definition of integration

## Solutions to Barriers to Integrating Academic and Vocational Education

1. Train teachers better/differently; reform teacher preparation program; develop university support (training, technical support)
2. Target all students for vocational education
3. Do a LOT of PR for vocational education
4. Team teach/planning by teachers, students, administrators, counselors, community
5. Cross hire positions into vocational education department
6. Mentoring span academic and vocational
7. Provide conscience-raising sessions for all
8. Time (school periods, day, year); longer day - year - with increased salaries
9. Administrative commitment for change
10. Community needs assessment
11. Eliminate/rethink advanced diploma
12. Local level planning and restructuring
13. Flexibility in TEA regulations; state approval of applied academics courses
14. Provide training for all involved; cooperative effort - NGT set-up; explain education achievement for life-long learning
15. Field trips or industry tours for academia; monthly trips for all counselors
16. Community, industry, business involvement and support
17. Re-education of administration; ask for administrative support
18. Move to competency-based education; performance-based assessment
19. Commitment across all levels
20. Reverse statutes that are barriers; educate legislature
21. Start out with volunteer teams; exemplary pilot programs; have teams visit these programs
22. Incentive program
23. Public relations/advertising/mass media - sell everyone
24. Develop integration plan
25. Ownership from all levels, teachers, counselors
26. Vocational education is not the same as it was "yesterday"
27. Curriculum integration; develop curriculum materials that integrate; joint development by academic and vocational; competencies in all courses; eliminate curriculum overlap; coordinated curriculum documents from TEA
28. Set goals/district philosophy; create district vision for integration
29. Release time
30. Flexibility in graduation requirements - textbook proclamations
31. Activities - school wide
32. Rearrange master schedule
33. Involve younger students in technical education
34. Change philosophies "we vs. them" to "us"
35. School personnel in-service (training); staff development (district-wide); bring in inspired people
36. Extended contract for teachers for articulation
37. Required attendance at vocational workshops for academic teachers
38. Vocational teachers learn about each other
39. Academic teachers see how what they teach applies
40. Mandate overall participation of integration; provide funds to do so
41. Rethink agency organization (TEA)

42. Teachers return/go to industry in the summer; shadow business experience in the community
43. Do away with the career ladder (no one shares ideas)
44. Clear definition coordinated with essential elements
45. Do away with the essential elements - let the teachers decide what to teach
46. Use shared problem-solving techniques among teacher practitioners
47. Increased vocational counseling; promote job (career) awareness
48. Pro-active role by TEA leadership
49. Site-based management
50. Give academic credit for vocational courses where appropriate
51. Make it a part of accreditation
52. Re-examine the whole issue of the Carnegie unit
53. Communication and coordination; provide training
54. Utilize team teaching or planning; cross-departmental teacher teams; pair teachers (Voc. & Acad.) communication, instruction, student activities, resources
55. De-emphasize isolated courses and instruct from holistic approach
    Appropriate money; focus resources (financial and human) for development of integration
56. Revise federal legislation to promote comprehensive planning
57. Develop rules that promote multidisciplinary instruction
58. QWIP, PIC
59. Designate the leadership
60. Academic teachers see how what they teach applies
61. More information provided
62. More cooperative training with industry
63. Public forum - parents, industry, community, school
64. New leadership and guidance and teachers with right philosophy (integration)

## Solutions listed as Top Five

1. Public relations; professional mass media
2. Ownership from all levels, teachers, counselors (ALL LEVELS); commitment from all levels
3. Curriculum integration; coordinate curriculum documents through TEA
4. Set goals/district philosophy
5. Funding/release time
6. Use shared problem-solving techniques among teacher practitioners
7. District-wide staff development on this subject; inservice/staff development to explain educational achievement for lifelong learning; more information provided for teachers, parents, administration, etc.; training for all involved; cooperative effort (NGT set-up)
8. Model programs; visit model program at a pilot site (how-to)
9. Do away with the essential elements - let the teachers decide what to teach
10. Focus resources to meet this objective
11. Communication, coordination, and cooperation
12. Mandate overall participation
13. De-emphasize isolated courses and instruct from holistic approach
14. Increase vocational counseling
15. Develop integration plan
16. Cross-department teacher teams; pair teachers to work together and develop curriculum; teaming (training, planning,cross-hiring,teaching,staffing)

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17. Greater flexibility from state agency
18. Academic teachers see how what they teach applies
19. Designate the leadership
20. Definitions
21. Revise graduation requirements/statutes/rules/textbook proclamations/TEA organization
22. Revise federal legislation to promote comprehensive planning
23. Revise teacher preparation; train teachers better; increased funding for teacher training
24. Set goals/philosophy/district-wide
25. Funding/release time
26. Change philosophy - "we vs. them" to "us"
27. Public forum and cooperation - school, community, business
28. Attitudes - compassionate training
29. Modeling/assessment
30. State leadership
31. Restructure the bureacracy (federal, state, local)
32. Local planning/restructure; create district vision
33. Longer day,year,salaries
34. Community needs assessment
35. Community/business involvement
36. Flexibility in TEA requirements, state approval of all applied academic courses

## Solutions Listed in Main Group

1. Change in philosophy "we vs them" to "us"
2. Coordinated curriculum documents through TEA
3. More inservice and staff development (PAID)
4. More information (quality) provided
5. Public forum and cooperation among schools, community, and business
6. Assertive leadership (compassionate, new)
7. Training - life-long learning
8. Communication, coordination, and cooperation
9. Mandate overall participation
10. De-emphasize isolated courses - holistic approach
11. Increase in vocational counseling
12. Local planning - community involved
13. Comprehensive planning
14. Funds with mandates
15. Longer day, longer year, more money
16. No career ladder
17. Re-evaluate district philosophy
18. Public relations activities
19. Greater flexibility from state agency and board
20. Academic teachers discover how what they teach applies

# An Overview of Integrating Vocational and Academic Education

*Michelle Sarkees-Wircenski*
University of North Texas

General Session

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# NEED FOR STRONG BASIC SKILLS

- A NATION AT RISK, RELEASED IN 1983 BY THE NATIONAL COMMISSION ON EXCELLENCE IN EDUCATION, STRESSED A NEED FOR RENEWED EMPHASIS ON BASIC SKILLS INSTRUCTION AND INCREASED ACADEMIC PERFORMANCE.
- THE INCREASING PUBLIC CONCERN REGARDING THE ACADEMIC OUTCOMES OF HIGH SCHOOL GRADUATES AND THE GROWING DEMAND FOR ACCOUNTABILITY FROM THE PUBLIC SCHOOL CURRICULA.

- THE INCREASE IN THE ACADEMIC COURSES NECESSARY FOR GRADUATION IN MANY STATES IN THE NATION'S SEARCH FOR EXCELLENCE AND THE RESULTING CHANGES IN CURRICULUM.

- REQUESTS FROM BUSINESS AND INDUSTRY THAT GRADUATES BE PREPARED WITH A FOUNDATION OF BASIC ACADEMIC SKILLS THAT CAN BE RELATED TO ENTRY LEVEL JOBS.

- ADVANCES IN TECHNOLOGY WHICH HAVE INCREASED THE NECESSARY LEVELS OF MATH, READING, COMMUNICATION SKILLS, AND CRITICAL THINKING SKILLS FOR EMERGING OCCUPATIONS.

(PRITZ AND CROWE, 1987)

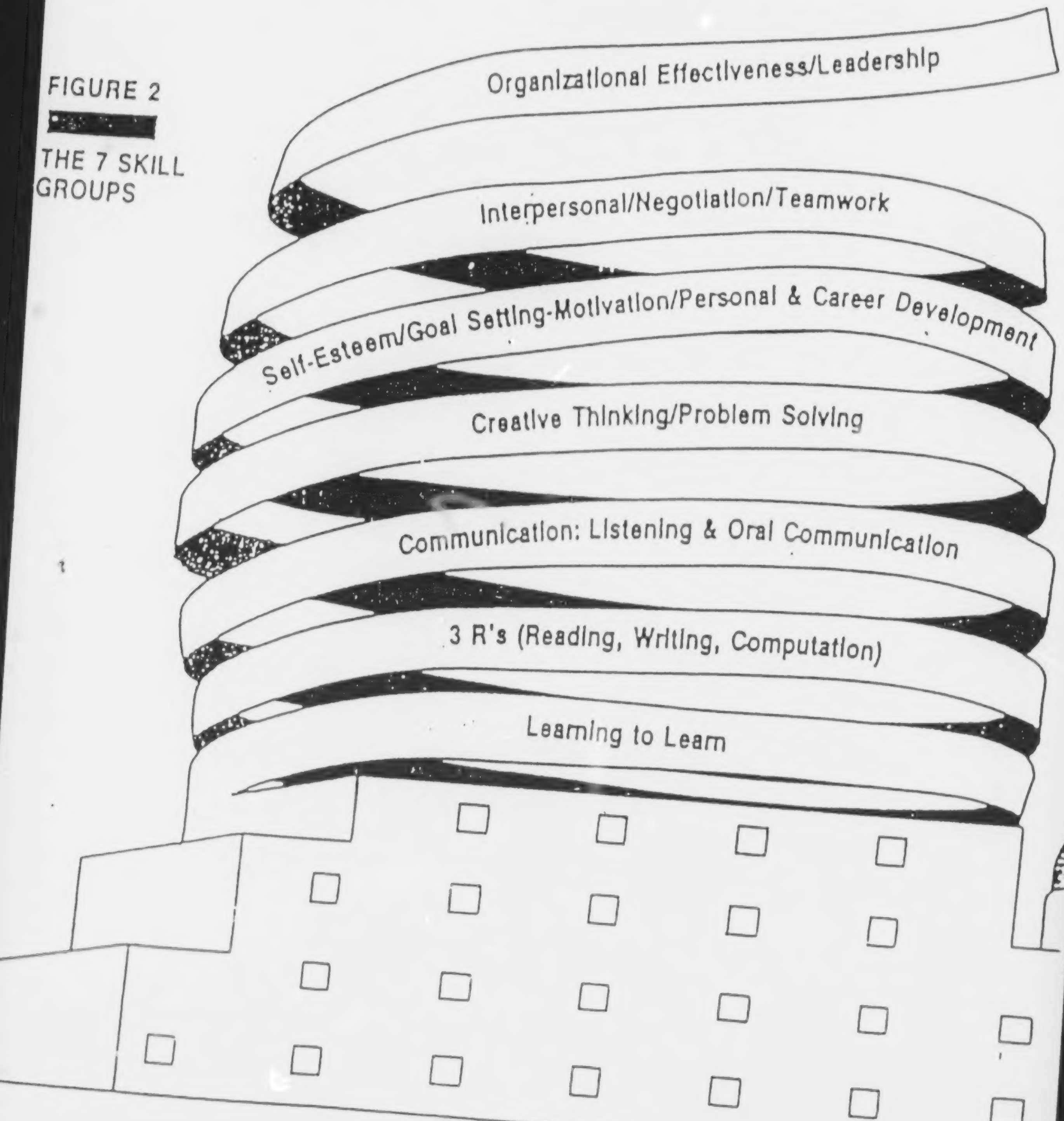
IN THE WIDELY QUOTED PUBLICATION ENTITLED, WORKFORCE 2000, IT IS STATED:

> IF THIS BRIGHT FUTURE IS TO BE REALIZED, THE EDUCATIONAL STANDARDS THAT HAVE BEEN ESTABLISHED IN THE NATION'S SCHOOLS MUST BE RAISED DRAMATICALLY. THERE IS NO EXCUSE FOR VOCATIONAL PROGRAMS THAT "WAREHOUSE" STUDENTS WHO PERFORM POORLY IN ACADEMIC SUBJECTS OR FOR DIPLOMAS THAT REGISTER NOTHING MORE THAN YEARS OF SCHOOL ATTENDANCE. FROM AN ECONOMIC STANDPOINT, HIGHER STANDARDS IN THE SCHOOLS ARE THE EQUIVALENT OF COMPETITIVENESS, INTERNATIONALLY.

(JOHNSON AND PACKER, 1987)

FIGURE 2

THE 7 SKILL GROUPS


Organizational Effectiveness/Leadership
Interpersonal/Negotiation/Teamwork
Self-Esteem/Goal Setting-Motivation/Personal & Career Development
Creative Thinking/Problem Solving
Communication: Listening & Oral Communication
3 R's (Reading, Writing, Computation)
Learning to Learn

# BASIC COMPETENCIES

A - Entry Level Prerequisite Skills

B - Reinforced and integrated during Vocational Training

C - Problem Solving Applications

MINIMAL COMPETENCY - 85%
or as designated in the Competency Achievement Plan

| | ALLIED HEALTH CAREERS | | | AUTO MECHANICS | | | BUSINESS/OFFICE | | | CARPENTRY | | | DATA PROCESSING | | | D.E./MARKETING | | | DIESEL MECHANICS | | | HOME ECONOMICS | | | INDUSTRIAL TECH. | | | PRACTICAL NURSING | | | VOCATIONAL AGRICULTURE | | | WELDING | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BASIC COMMUNICATION SKILLS | A | B | C | A | B | C | A | B | C | A | B | C | A | B | C | A | B | C | A | B | C | A | B | C | A | B | C | A | B | C | A | B | C | A | B | C |
| 1. Use plural words appropriately in writing and speaking. | – | | | – | | – | – | | – | – | | – | | | | – | | – | – | | – | – | – | | – | | | – | – | – | – | – | – | – | | |
| 2. Use appropriate contractions & shortened forms of words with an apostrophe in writing. | – | – | | – | | | – | – | – | – | | | – | | | – | | – | – | | | – | – | | – | | | – | – | | – | – | – | – | | |
| 3. Use appropriate abbreviations of words. | – | | | – | | | – | – | – | – | | | – | | | – | | – | | | | – | – | | – | | | – | – | – | – | – | – | – | | |
| 4. Use words appropriately which mean the same as other words but are spelled different. | – | | | – | | | – | – | – | – | | | – | – | | – | | – | – | | | – | – | – | – | | | – | – | – | – | – | – | – | | |
| 5. Use words appropriately which are opposite of one another. | – | | | – | | | – | – | – | – | | | – | – | | – | | – | – | | | – | – | – | – | | | – | – | – | – | – | – | – | | |
| 6. Add appropriate word choices in writing and speaking. | – | | | – | – | | – | – | – | – | – | | – | – | – | – | | – | – | – | | – | – | – | – | | | – | – | – | – | – | – | – | | |
| 7. Add appropriate beginnings (prefixes) and endings (suffixes). | – | – | – | – | – | – | – | – | – | – | | | – | – | | – | | – | – | – | | – | | | – | | | – | – | – | – | – | – | – | | |
| 8. Use accurate spelling of words. | – | – | | – | | | – | – | – | – | – | | – | – | | – | – | – | – | | | – | – | – | – | | | – | – | – | – | – | – | – | | |
| 9. Use correct agreement of nouns, verbs, pronouns, adjectives, and adverbs. | – | | | – | | | – | – | – | – | – | | – | – | | – | | – | – | | | – | – | | – | | | – | | | – | – | – | – | | |
| 10. Use correct person, gender, number, case and tense. | – | | | – | | | – | – | – | – | | | – | | | – | | – | – | | | – | | | – | | | – | | | – | – | – | – | | |

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# SAMPLE CROSS-CORRELATIONAL MATRIX DISPLAY

| ELECTRONICS | Atomic Theory | Sources of Energy | Circuit Fundamentals | Fabrication | Scientific Calculation | Resistance (REI) | Study of Measurement | Ohm's Law | Series Circuits | Parallel Circuits | Series/Parallel Circuits | Magnetism | Nature of Alternating Current | Safety Devices | Network Theorems | AC Generations | Inductance | Inductive Reactance | Capacitance | RC Time Constants | Capacitive Reactance | Series RCL Circuits | Parallel RCL Circuits | Complex Numbers | Resonance | Vacuum Tubes | Servo Systems | Nature of NP Junction | Rectifiers | Filters | Special Semiconductive Diode | Bipolar Junction | Transistors | Transistor Circuits | Transistor Amplifiers | OP Amplifiers | Logic Devices | Computer Math | Boolean Algebra | Wave Shaping | Modulation | Transmission Lines | Antenna Theory | Computer Programming |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Mathematical Skills** | ◄—(BASIC ELECTRICITY)—► | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Area | | | | | ● | ● | ● | | | | | ● | | ● | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | ● | ● | ● | ● | |
| Volume | | ● | | ● | ● | ● | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | ● | ● | | |
| Basic Whole Number Skills | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Computers and Calculators | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Coordinate Geometry | | | | | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | ● | ● | ● | ● | ● |
| Decimals | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Directed Number (+, -) | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Exponents, Powers, Boots | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Formulas and Equations | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Fractions | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Geometric Plane Figures | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Graphs and Tables | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Logarithms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ● | ● | | | | | | | | |
| Matrices | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ● |
| Measurement, Lineal | ● | | ● | ● | ● | ● | ● | | | | | ● | | ● | | ● | ● | | ● | ● | | ● | ● | | ● | | ● | | | | | | | | | | | | | ● | ● | ● | ● | |
| Measurement, Electrical | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | ● | ● | ● | ● | |
| Parallels and Perpendiculars | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ● | ● | ● | ● | ● | | | | ● | ● | ● | ● | |
| Percents | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Polynomials | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Products and Factors | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Ratio and Proportion | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Rational & Irrational Numbers | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Solving Inequalities | | | | | | | | | | | | | | | | | | | | | | | | ● | ● | | ● | | | | | | | | | | | | | | | | | ● |
| Special Triangles | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ● | ● | ● | ● | ● | | | | ● | ● | ● | ● | |
| Trigonometry | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ● | ● | ● | ● | ● | | | | ● | ● | ● | ● | |
| Vector Applications | | | | | | | | | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ● | ● | ● | ● | ● | | | | ● | ● | ● | ● | |
| Metric Prefix | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Base Number Systems | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ● | ● | ● | | | | | |
| Boolean Algebra | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ● | ● | ● | | | | | |

## COMMITTEE:

Bill Ford, Burlington High School
Bill Richards, Essex Junction Area Vocational Center
Richard Robinson, Rutland Area Vocational Center
Luther Tabor, Trade and Industry Consultant

We recommend that Electronics full program completers be granted Math equivalency credit.

MAY 20, 1985

# MATRIX: MATH APPLICATIONS BY CONTENT UNITS

| MATH TOPICS | CONTENT UNITS IN WHICH MATH TOPICS ARE COVERED | | | |
|---|---|---|---|---|
| | MECHANICS | CONSUMER HOMEMAKING | WOODS | ELECTRICITY/ELEC. |
| A. BASIC ARITHMETIC SKILLS | | | | |
| 1. WHOLE NUMBERS | Timing (also degrees)<br>Grade averages<br>Engine rebuilding | (F) Measurement tech.<br>(C) Teaching math to children<br>(L) Family budgets | Statements<br>Board feet<br>Cost est.<br>Shop bill<br>Work orders | See note. Examples: Ohm's Law, Watt's Law, Inductance, Capacitance |
| 2. FRACTIONS | Cylinder displacement<br>Place valve | (F/C) Understanding recipes<br>(F/C) Increasing/Decreasing recipes<br>(S) Amount of fabric | Measurements<br>Dimensioning<br>Proportions<br>Building to scale | Parallel circuits |
| 3. DECIMALS | Micrometer readings<br>Brakes<br>Displacements<br>Tolerances | (F) Budgeting for foods<br>(C) Spending budgeted allocations<br>(L/S) Figuring costs of products/garments | Cost est.<br>Shop bill<br>Work orders<br>Statements | Digital instrumentation |
| 4. PERCENT | Ratio<br>Coolant system | (L) Family budgeting<br>(C) National, state, local data<br>(F/L) Dietary requirements | Markup<br>Cutting loss | Percentage of error<br>Percent of amplification |

E: Applications in this area are found in all levels of the four-year sequence of electronics.

## Texas Education Agency Symposium

Moderator: *Jerry D. Pepple*
University of Illinois

Speakers: *Grace Grimes*
Assistant Commissioner,
Curriculum and Instruction

*Robert S. Patterson*
Director,
Vocational Education

General Session

## Texas Education Agency Symposium

Grace Grimes
Texas Education Agency

Robert S. Patterson
Texas Education Agency

*Comments by Grace Grimes:*

Teachers need to address education for all students and make connections between general and vocational education for all students:

1. Reinforcement of academic skills in vocational courses.
2. Reinforcement of academic skills by academic teachers.
3. Academic teachers need applications in courses for every concept taught.*

*Why don't we have these applications? We don't know. We came up in this same educational system.

We need massive restructuring of preservice and inservice for teachers. I strongly recommend it.

*Comments by Robert S. Patterson*

1. We need to change attitudes, the way we look at things. Tracking vocational students builds barriers; students are branded.

2. The Carl Perkins Act and money is a vehicle, not a reason to integrate general and vocational education. The reason is to better serve or develop total students.

Education is presented in "packages", each course being a package. At the end of high school, a student has a basket of packages. We need to teach our part of the puzzle, but show how it fits together.

Educators are encouraged to go home and look for common topics and build bridges.

A ring was used as an example of integration. By looking at a ring one can consider history (Why do people wear rings? What is the history of rings?), geography (Where do the materials used to make a ring originate?), science (What elements make up the ring? How are these elements processed?), manufacturing (How is the ring made?), marketing (What is the process of selling the ring?), and art (Consider the design of the ring.).

It is not a sin for a student to do one project for grades in several courses; this will help enable students to see the bridge between subjects

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# Setting the Stage for Integration at the Local District Level

*Mary W. Hendrix*
Educational Development & Training Center
East Texas State University

Topic C1

# Setting the Stage for Integration at the Local District Level

Mary W. Hendrix, Director

Educational Development and Training Center

East Texas State University

Texas A & M University

Integration of Vocational and General Education Conference

Austin, Texas

April 19, 1991

## The Five Most Common Integration Fallacies

### Integration is:

1. vocational education instructional materials that emphasize academic principles.
2. vocational teachers emphasizing academic principles in their instructional deliveries.
3. an event and can be accomplished during a one-day workshop.
4. academic teachers grading the academic skills emphasized in vocational education classes.
5. for the educationally disadvantaged.

# Five Points to Remember About Integration

1. The term **integrate** means to form, coordinate, or blend into a functioning or unified whole.

2. Integration is a process not an event—not one specific strategy will suffice—it is a continuous operation.

3. Both vocational and academic teachers must collaborate, as well as communicate, for integration to occur.

4. Integration is for all students! It establishes motivation and relevancy for learning.

5. Integration cannot occur simply by providing correlated instructional materials.

# Plan for Integration at the Local District Level

I. Provide key administrators with the background information necessary to secure their support and commitment.

II. Form a committee comprised of: academic and vocational teachers who are considered leaders: administrators, counselors, parents, business and industry representatives, community leaders, and school board members.

III. Develop a three-year integration plan with goals, objectives, specific strategies, and performance measures.

IV. Conduct an eight-hour overview training session for all staff—vocational teachers, academic teachers, counselors, and administrators.

   A. Begin the training by citing the benefits of integration.

      Examples:
      1. Students are motivated to learn—they see the relevancy of learning.
      2. Students' scores on the Texas Assessment of Academic Skills' scores will rise!
      3. Students become equipped with workplace basic skills.
      4. The public obtains a more positive view of public schools.

   B. Describe your local district's integration plan.

      1. Allow participants to voice their concerns and any problems they foresee in implementing the integration plan.
      2. Respond to their concerns.

   C. Provide opportunities for vocational and academic teachers to communicate and collaborate.

      1. If possible, pair a vocational teacher with an academic teacher (rotate the academic teacher) to determine correlations for application.
      2. Provide a conduit for teachers to communicate.
         Examples: TAAS objectives, essential elements from both courses to determine correlations.
      3. Assign teachers a written task to complete.

   D. Secure feedback from participants—have each participant state something he/she learned from the experience.

V. Conduct weekly faculty meetings to discuss progress toward meeting the goals and objectives of the district integration plan.

VI. Provide all faculty with an annual report describing the integration activities, goals and objectives achieved, and concerns raised.

VII. Revise integration plan as needed.

# Integrating Technology Education and General Education

*Cam O'Keefe*
EIMC
University of Texas at Austin

*Clif Wendel*
Technology Teacher
Grisham Middle School

*Karen Kamenzind*
Social Studies Teacher
Grisham Middle School

*Susam Schwausch*
Language Arts Teacher
Grisham Middle School

Educational Development & Training Center
East Texas State University

Topic C2

# DEVELOP INSTRUCTIONAL MODULES INTEGRATING APPROPRIATE GENERAL EDUCATION AND INDUSTRIAL TECHNOLOGY EDUCATION ESSENTIAL ELEMENTS

**TEA Curriculum Development Grant #C-02**

## OBJECTIVES:

The general objective of this project is to identify general education essential elements which are currently taught and/or reinforced in identified Industrial Technology Education courses and develop instructional modules that will enhance the teaching and application of the selected essential elements:

Specific objectives include the following:

1. To identify the language arts, mathematics, science and social studies essential elements that are currently taught and/or reinforced in selected Industrial Technology Education courses.

*Selected Courses as Identified in TEA Grant #C-02:*

- *Introductory Industrial Technology I*
- *Introductory Industrial Technology II*
- *Technology Systems*
- *Production Systems*

2. To develop instructional modules which will enhance the instruction of these identified essential elements in general and Industrial Technology Education.

3. To develop recommended teacher in-service strategies and guidelines for implementation of the instructional modules at the district level.

4. To pilot the instructional modules in no less that four school districts.

*Districts Identified:*

- *Abilene Independent School District*
- *Richardson Independent School District*
- *Round Rock Independent School District*
- *Yaleta Independent School District*

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## FOR ADDITIONAL INFORMATION CONTACT:

Cam O'Keefe or Alan L. Towler
Extension Instruction and Materials Center
The University of Texas at Austin
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Austin, Texas 78713-7218
512/471-7716 1/800/252-3461
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BEST COPY AVAILABLE

## Considerations for Developing an Interdisciplinary Unit

1. Determine community resources and interests.
2. Investigate the needs of the school and students.
3. Set reasonable expectations.
4. Stimulate interest in administrators, faculty, and students.
5. Be interdisciplinary, involving all possible areas.
6. Encourage creativity and problem solving.
7. Build in various levels of potential for success.
8. Design multiple components.
9. Research continued use of results.
10. Consider duplication and growth of modules.
11. Incorporate school and community recognition.
12. Investigate the possibility of contributions and support from local industry.
13. Become familiar with current events (community &/or world needs).

## Teacher Concerns To Be Addressed

Will administrators be supportive and cooperative?

Will we have time to plan with team teachers?

Will there be adaquate and appropriate staff development?

Will we have time for implementation and still teach our existing EE's?

Will all teachers cooperate with the plan?

Will teachers feel territorial and not want to loose their own "discipline identy"?

Will modules be truly useful for students?

Will the class work be redundant for the students?

Will students not taking technology be left out of learning?

# Areas Covered in Technology

## Tech I & Tech Systems

- Communications
  - Design & Sketching
  - Reproduction Processes
  - Communication Systems
  - Computer Related Communications
  - Space-based Systems
- Energy
  - Apparatus
  - Models
  - Maps & Charts
  - Computers
  - Robots
  - Transportation Systems
  - Space-based Systems
- Production
  - Organization & Management
  - Processes
  - Construction
  - Automation
  - Computer Numerical Controls
  - Materials
  - Recycling
  - Space-based Systems

## Tech II & Production Systems

- Manufacturing
  - Materials
  - Recycling
  - Organization & Management
  - Financial Resources
  - Mass Production
  - Charts & Graphs
  - Computers
  - Automation
  - Space-based Systems
- Construction
  - Site Selection
  - Design & Construction
  - Electrical
  - Plumbing
  - Finishing
  - Subcontracting
  - Landscaping
  - Energy Conservation
  - Automation
  - Recycling
  - Space-based Systems

# Personal and Industrial Safety Technology

**Technology Activity Summary:**
Through lecture, discussion and demonstrations the students will become aware of the need for developing a safe attitude and safe work environment. They will become familiar with the machines and equipment in their lab areas. Students will develop an awareness that safety is universal.

## Technology Overlap

**Language Arts Activity:**
Students will observe safe operation of machines in IT, note steps involved in the safe operation , and return to the classroom to compose the steps showing proper sequence of safe operation for specific machines.

**Math Activity:**
Students will observe calibration / adjustments on each piece of equipment in the lab. The importance of accurate measurement will be discussed.

**Science Activity:**
Chemical and open flame safety - Students will observe safe use and handling of chemicals and open flames in a laboratory setting.

**Social Studies Activity:**
Students will compare safety procedures between today and the time of the Industrial Revolution.

**Overlapping Timeline:**
Social Studies only begins Days 1 & 2

| Day | 3 | 4 | 5 | 6 | 7-12 |
|---|---|---|---|---|---|
| Technology | 1-SS | 2 | 3-LA | 4-M | 7+ |
| Language Arts | 1 | 2 | 3 | 4 | |
| Math | | 1 | 2 | 3 | |
| Science | | 1-T | 2 | | |
| Social Studies | 3 | | | | |

**Technology EE's:** 70.50.4 Safety

# Video Photography
# Technology

**Technology Activity Summary:**
Given the appropriate instruction, forms and equipment, students will write, direct, perform in, edit and produce a quality video which is a mimum of 3 minutes in length. Students will then film a representation of prominent historical Texans presented by the language arts department.

### Technology Overlap
### Language Arts Activity

Students will write and act out an original script for vignettes describing five events in Texas history.

### Math Activity

Students will evaluate the impact of TV commercials and the student made educational video.

### Science Activity

Students will explore the use of video photography in scientific research, medicine, and modern technology.

### Social Studies Activity

Students will identify events and individuals in history, report to the language arts classes, and view a video of their topics.

**Overlapping Time Schedule:**

| Day | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Language Arts | | | 1-SS | 2 | 3 |
| Math | | | 1 | 2 | 3 |
| Social Studies | 1 | 2-M | 3 | | |

**Language Arts only - Day 6 - 13 Technology may get involved with props, depending on the time frame and the classes.**

| Day | 14 | 15 | 16 | 17 | 18 |
|---|---|---|---|---|---|
| Technology | 1 | 2 | 3 | 4 | 5 |
| Language Arts | 14 | 15 | 16 | 17 | 18 |
| Science | (Optional) | 1 | 2 | 3 | 4 |

| Day | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|
| Technology | 6 | 7 | 8 | | |
| Language Arts | 19 | 20-T | 21-T | | |
| Math | | | | | 4 |
| Social Studies | | | | 4 | |

# Principles of Technology: The Marriage of Academic and Vocational Education at Leander High School

*Mark Kincaid*
Administrative Assistant
Leander High School
Leander ISD

Topic C3

# Principles of Technology: The Marriage of Academic and Vocational Education at Leander High School

Mark Kincaid
Leander ISD

Principles of Technology: a course that meets the needs of "middle of the road" students and industry/employers.

Principles of Technology is an applied physics course which teaches 95% of the competencies that Physics teaches:

Mechanics Systems
Fluids Systems
Electrical Systems
Thermal Systems

Fourteen physics concepts are each taught within the above four systems.

A Unit within Principles of Technology consists of:

Teaching
Examples
Guided Practice
Math Lab
Hands on Vocational Lab (real work things students will see in industry)

Principles of Technology provides a broad base of skills. It addresses

Problem solving.
Learning how to learn.

Principles of Technology may be used as a springboard along with other sciences for college-bound students, and as a tool for those students who are job-bound.

Some universities accept Principles of Technology as a Science Lab credit for admission (e.g., Texas A&M University, Texas Tech University, MIT, etc.).

*A science credit may not yet be obtained for this course.

Who can teach Principles of Technology?

Physics/Science teacher
Industrical Technology teacher
Agriculutral Education teacher
Trade and Industrial Technology teacher

Students who can take this course:

11 or 12th grade students who have taken or are enrolled in pre-algebra

Videos and materials for Principles of Technology I and II amy be obtained from the Texas Education Agency. Contact Neil Ballard at (512) 463-9474.

# Physics - Technology Integration

*Tony Bertucci*
Technology Teacher
Science Academy
Austin ISD

Topic C4

# Physics - Technology Integration

Tony Bertucci
Austin ISD

## The Science Academy

The Science Academy is a high school within a high school; it is a science magnet school at Johnson High School in Austin ISD. A technology teacher, within the *Research and Development* course, speaking on robotics teams with a physics teacher. Classes are taught in 2 hour blocks; the physics class is paired with robotics lab, including instruction in drafting, CAD, and electronics. The class uses "generic CAD"; it is cheaper than AutoCAD. For projects, students are responsible for both the design and the performance standards; if the project doesn't work, they get no grade. This 9th grade class integrates conceptual physics with technology.

The Science Academy is a district-wide magnet school. There is discussion to make it a regional magnet school. There are 200 freshmen a year, with 600 total population in the academy. Four years of science and four years of math are required. Most graduates are college-bound. *Research and Development* is a 11-12th grade elective in the Science Academy. It is a pre-engineering course with 15 CAD stations. Students design, build, and test projects.

## The Physics-Technology Class

This class was started last year (1989-1990) as a pilot project in the 9th grade. This year it is a full-time program. Formulas were taken out of the curriculum and replaced with concepts. The class consists of 70% science and 30% technology. There are 2 labs and 1 lecture (1 physics lab, 1 technology lab, 1 lecture). A problem is that these students are stressed timewise. The teacher also works with English teachers; when students have science write-ups, they also count for a grade in English.

There has been a good response to this program. Many students who would never have gone down the technology wing are participating. After 6 wseeks, students are working with scale drawings and building to scale.

The math is integrated. Architecture and drafting are combined with geometry. In the drafting/geometry, students work together on the same project, both regular education students and gifted students.

Traditionally, technology classes are considered for lower ability students and magnet classes for higher ability students. This model puts both students together, where they work cooperatively.

## Funding

Local funding is used, with no extra funds. Materials come from many sources. Some are industrial donations (interpersonal contacts); broken items are collected; and fully functioning technology labs make some parts.

## Technology Labs

There are open technology labs, where students can use the labs as long as there is a teacher present, even if they are not enrolled in that lab. An increased demand on lab time is expected. Class size is approximately 20-22.

## Plans

TSTI is coming in to do a series on holograms and lasers. This will give students different options besides college.

## Emphasis

There is a need for 4-5 technicians to every engineer in today's work force. Technology is such that continual training and retraining is necessary. This program can help meet some of these needs.

# Mathematics Skills Meeting Vocational Needs

*Don Westbrook*
Director of Special Programs & Services
Goose Creek Consolidated ISD

*Sherri Frost*
Mathematics Teacher
Goose Creek Consolidated ISD

Topic C5

# Mathematics Skills Meeting Vocational Needs

Don Westbrook
Sherri Frost
Goose Creek Consolidated ISD

## Problem

Vocational students have a lack or mathematics, reading, and communication skills, resulting in teachers having trouble teaching the vocational education curriculum. The lack of academic skills resluted in a problem with vocational education success.

## Solution

1. Identify philosophy and purpose.
2. Identify 18 TEAMS objectives
3. Have teachers bring Vocational Education curriculum guide to staff development
4. Teachers identify objectives of TEAMS that are essential to their vocational program.
5. Develop lesson plans and activity sheets to teach objectives identified.
6. Pull 4 questions/objectives to make a pretest, using TEAMS format
7. Pre-test students and determine grades (done by aide)
8. Hired Aide with Perkins money
9. Computer program - Skills Bank; Computer lab - JTPA math remediation, bought computers
10. Aide told teachers pretest results
11. Remediate students from pretest during first 6 weeks
12. Post test after 6 weeks
13. Pull out students who still had problems 2 days/week, 45 minutes/day; open in/open out
    when master skills, go back to vocational labs
14. This year have a math teacher, less pull out. Team teaching within lab. Teaching the teachers how to teach, develop lesson plans and activities.

Special education decides how to remediate their identified students.

There was initial resentment. Vocational education teachers were not comfortable teaching mathematics, and they didn't like students being pulled out. A mistake made was that the vocational edcuation teachers were not sold on the value of mathematics.

## Goals

After mathematics program is in place, the goal is to hire a certified teacher in language arts, especially reading.

There needs to be a separate course credit for consumer math.

Develop a modified block schedule - CCC unit; combine mathematics and vocational education.

## Certified Mathematics Teacher

The certified mathematics teacher covers 3 campuses. After indentification and testing, she begins with basics and builds up. She combines pulling out small groups with going into the lab if a lot of students are having trouble. Regular times are scheduled to go into the lab. She has lesson plans that she shares with the teacher. They look at work and immediate grades. There is no failure until students refuse to do. If they have difficulty, work is immediately redone. Students help each other. They go back to the lab when finished.

In May, they will test the students and evaluate the program. Teachers have input throughout the year. The vocational teachers see the mathematics teacher as a resource/mentor.

Next Year: Vocational education teachers will identify 4 objectives that they feel comfortable teaching, based on what they have learned from the certified mathematics teacher.

**Carl Perkins Funds:** used for purchasing materials and for salaries. The salaries were funded 75% by Carl Perkins money and 25% local money. This allows teachers to work with ineligible students.

# VOCATIONAL MATH CONFERENCE NARRATIVE

Each vocational teacher identifies those math objectives essential for success in that particular vocational class. A vocational math manual that covers all objectives is organized by the math teacher. The manual is issued to each vocational teacher, and includes lesson plans, explanations, worksheets, and keys.

In a summer workshop, vocational teachers, along with the certified math instructor, devise lesson plans and activity sheets which enable the intergration of math skills into the existing vocational curriculum.

A prescriptive pre-test is given to each vocational class under the direction of the vocational and math instructor in mid-September. The test is graded by the math teacher and results are given to the vocational teacher. The vocational teacher, with the solicited aid of the math teacher, reviews and reteaches for a period of 4-6 weeks.

At the end of October or first of November, a post-test is given to those students who did not master the pre-test. Graded by the math teacher, the results are then given to the vocational teacher.

If a majority of the class exhibits a deficiency, the identified objective is retaught to the entire class in the vocational classroom. As students master the objective they exit to vocational shop classes. A pull-out program is implemented only if a few students in vocational classes need help. These students are remediated two times a week in a different location for 45 minutes each period. Students who still have problems should remain in class while those who have mastered the identified objectives go to shop classes.

Worksheets and papers are graded and kept by the vocational math teacher. Grading worksheets in class is best when possible so that immediate feedback can be provided and reteaching can take place. Grades are recorded by the vocational math teacher, then averaged and submitted to vocational teachers to be averaged with other vocational grades.

A final test is given to determine mastery and retention. This test should be given in early May to those students who have not passed the post-test.

# MATH OBJECTIVES FOR VOCATIONAL CLASSES

| OBJECTIVE NO. | OBJECTIVE DESCRIPTION |
|---|---|
| 1 | Select set of numbers order least to greatest. |
| 2 | Rounding of numbers to a particular place value. |
| 3 | Identify equivalent fractions, decimals, and percent. |
| 4 | Convert numbers from exponential notation to standard notation. |
| 5 | Solve problems involving addition, subtraction, and multiplication of fractions and mixed numbers. |
| 6 | Use basic operations to solve problems with decimals. |
| 7 | Solve problems involving addition of integers. |
| 8 | Solve word problems involving multiple operations. |
| 9 | Solve word problems using formulas. |
| 10 | Solve word problems involving proportions. |
| 11 | Solve word problems using percent. |
| 12 | Solve problems involving metric/standard measurments using basic operations. |
| 13 | Solve word problems involving averages. |
| 14 | Solve word problems involving simple probability. |
| 15 | Use information from graphs and tables to solve word problems. |
| 16 | Solve problems involving geometric formulas. |
| 17 | Use geometric properties to solve problems involving geometric shapes. |
| 18 | Solve problems to determine the value of a variable. |

# INSTRUCTOR'S PLAN
# INFORMATION LESSON
## MATH

SUBJECT: Objective 7 - Integers

AIMS (or purposes): The students will be able to add and subtract both positive and negative integers and make sign changes.

TEACHING AIDS: Overhead projector/ chalkbaord

MATERIALS: transparencies

REFERENCES: Vocational Math Manual - Objective 7

PREREQUISITE EXPERIENCE OF THE LEARNERS: The students need to have good addition and subtraction skills and understand what a negative number and a postive number is.

I. PREPARATION (of the learner - motivation)
Lesson 1 - Understanding Positive and Negative Integers

Introduction:

- How do negative and positive integers affect our daily lives?
  - money
  - bank accounts
  - temperature
  - launching of space rockets
- How do negative and positive integers affect this vocational class?
  - answers will vary

Lesson 2 - Adding and Subtracting Negative and Positive Integers

Introduction:

- Review any points from lesson one that need to be stressed.

| II. PRESENTATION | III. APPLICATION |
|---|---|
| LESSON I | |
| Use of number line to identify numbers and their relationship to other numbers on the line. | Overhead transparency of number line |
| "Rules of Sign Changes" | Overhead transparency<br>Guided practice - overhead or hand-outs |
| LESSON 2 | |
| "Rules For Adding and Subtracting Integers" | Overhead |
| Use of a number line for adding and subtracting. | Overhead transparency of number lines<br>Guided practice - overhead or hand-out |

## IV. VERIFICATION AND/OR EVALUATION (final check on student's comprehension of material presented)

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Lesson 1 Worksheet - See Vocational Math Manual - Objective 7

Lesson 2 Worksheet - See Vocational Math Manual - Objective 7

## V. SUMMARY (Give a brief account of each topic reemphasizing the important points. This summary may be given at any place in the lesson the teacher feels will be profitable to the students)

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Lesson 1 Review use of number line and Rules for Sign Changes.

Lesson 2 Review adding and subtracting on a number line, Rules for Adding and Subtracting Integers, and points from Lesson 1 that are needed.

## Ojective 8

## Multiple operations involving addition, subtraction, multiplication and division

1. A Metal Trades class was working on different projects. Each group used the following number of rivets: 5,236; 2,365; 2,589; and 3,365. how many rivets were used in all?

2. A purchase order was made for 17 drills at $38.00 each. If the company paid $569.00, how much did they still owe?

3. An order arrived for 7 bundles of sheets of steel. Each bundle contained 24 sheets. If the sheets are to be divided into 14 jobs, how many sheets of steel will go to each job?

4. A machinist worked six days a week for 4 weeks and made $576.00 per month. How much did the machinist make per week?

5. A machinist is paid $7.00 per hour. If the machinist works 78 hours in two weeks, what will the gross pay be?

## Objective 12

## Word Problems involving Metric and Customary Measurement

1. A job site needed 18 feet of copper wire, 38 feet of steel wire, and 28 feet of tin wire. How many feet of wire are needed in all?

2. A rod iron pipe 468 inches long is to be cut into equal pieces. How long will each piece of rod be?

3. Three pieces of copper wire were cut from a 60-feet coil. If the lengths of the pieces were 12 feet, 8 feet, and 16 feet, how much of the coil was left?

4. Each box of nuts weighs 2 lbs. 3 oz. If a case contains 16 boxes, how much does the case weigh?

5. Bill worked 3 hrs. 20 min. on Tuesday, 4 hrs. 30 min. on Wednesday, and 6 hrs. 40 min. on Thursday. What is the total amount of time that Bill worked?

Sample

# Vocational Math Test
## Goose Creek Consolidated Independent School district
## Welding

Sample

ADD

| | | | | |
|---|---|---|---|---|
| 85 | 674 | 1727 | 8572 | 87,462 |
| 63 | 892 | 5247 | 308 | 70,410 |
| 68 | 480 | 9182 | 8793 | 8,546 |
| 47 | 513 | 2501 | 42 | 76,939 |
| 60 | 276 | 4798 | 4692 | 8,717 |
| +98 | +947 | +5033 | + 217 | +44,586 |

SUBTRACT

| | | | | |
|---|---|---|---|---|
| 732 | 7093 | 63,692 | 8000 | 50,065 |
| - 476 | -4982 | - 62,946 | - 724 | - 595 |

MULTIPLY

| | | | | |
|---|---|---|---|---|
| 4923 | 8642 | 6409 | 720 | 4706 |
| x 76 | x4900 | x 409 | x 807 | x 9 |

DIVIDE

$43\overline{)41{,}237}$ $\quad 37\overline{)23{,}939}$ $\quad 13\overline{)7163}$ $\quad 9\overline{)64{,}323}$

DECIMALS
Watch the signs.

| | | | | |
|---|---|---|---|---|
| $.21\overline{)327.6}$ | 156 | 16.80 | 1.86 | .753 |
| | x.28 | 4.62 | .03 | x 26 |
| | | | 2.05 | |

### Objective 5
### Addition, Subtraction, and Multiplication of FRACTIONS

1) 4 1/2 x 2/9
2) 8 7/8 - 7 15/16
3) 4 1/8 + 3 15/16
4) 7/8 x 11/21
5) 9 1/8 - 3 2/5

### Objective 6
### Addition, Subtraction, Multiplication, and Division of Decimals

| | | | | | |
|---|---|---|---|---|---|
| .873 | 1.7 | 1.16 | 86.141 | .34 | $5.4\overline{)1.08}$ |
| .199 | .412 | .873 | 27 | .125 | |
| | 4.890 | 12. | | | |

| | | | |
|---|---|---|---|
| .0003 | 48.26 | 7.27 | $10.25\overline{)2.5}$ |
| .007 | 29.117 | 4.88 | |

## REFERENCES AND SOURCES

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2. *Break Through to Math Levels 1-4*, New Readers Press, New York, 1983.

3. *Contemporary's Number Power Series*, Contemporary Books, Inc., Chicago, 1988.

4. Allan D. Sutter, *Contemporary's Number Sense Series.* Contemporary Books, Inc., Chicago, 1990.

5. Garold "Gary" Ellyson, *Vocational Math Series.* Pacific West Publishing Co., 1986.

# Developing Integrated Curricula

*Jerry Wircenski*
Professor
Trade and Industrial Education
University of North Texas

Topic C6

# Developing Integrated Curricula

Jerry Wircenski
University of North Texas

## "How-to" develop

Elementary teachers know how to integrate. Secondary teachers are specialized and don't know how.

## Goals

Let students know that the 3 R's are important.
Put academics in vocational classes

*Use curricula that were already there.

## Examples

In auto mechanics students were studying brakes. In mathematics, charts and graphs were taught with diagrams from auto mechanics class. English papers were written over seat belt laws and gas mileage requirements.

Students were given cameras to go and take pictures of people in the "real world" using Reading, Writing, Mathematics, and Communication skills.

Teachers gave future lessons to students to get ideas on "hands on" ideas, real world applications. The students supplied GREAT real world applications.

Teachers had community leaders come in and talk about their jobs. They dropped buzz words like "calculate," "solve," and "read" without saying, "Do your math; it's important for your job."

# Evaluation of Programs that Integrate Vocational and Academic Education

*Jerome T. Kapes*
Professof of Educational Psychology and Vocational Education
Texas A&M University

Topic C7

# Evaluation of Academic and Vocational Education

Jerome T. Kapes
Texas A&M University

## Definition of Evaluation

1. Educational evaluation - making judgements about merit, value, or worth of vocational programs. Based on judgement, someone has to make a decision.

2. Stufflebeam, et al. 1971 Phi Delta Kappan (CIPP model). Educational evaluation is the process of delineating, obtaining, providing useful information for judging decision alternatives. Based on useful information, what do we need to know to make a decision?

## Evaluation Models

1. $E = (P \approx O)$, Evaluation = Performance ≈ Objectives. Based on Ralph Tyler - parent of vocational evaluation. Congruency between performance and behavior. Problem - behavioral objectives are too mechanical, measure parts; not holistic, miss social/citizenship outcomes.

2. $E = M$, Evaluation = Measurement (e.g., new national test proposed by Bush. Problem: lots of information, but often we do nothing with it).

3. $E = PJ$, Evaluation = Professional Judgement. Good for complex situations (e.g., certification of programs), use teams of experts to make judgements, but measurement and objectivity may be missing.

   *(Best to put all three of the above models together for most useful evaluation)*

4. Context, Input, Process, & Product (CIPP) Model. Stufflebeam et al.

5. Formative and Summative Evaluation. Scriven - similar to Process and Product.

6. Cost-Benefit vs. Cost-effectiveness. Compares financial costs to financial or other outcomes.

7. Responsive Evaluation. Based on naturalistic methods, identifies stakeholders.

8. Adversary Evaluation (take the pros and cons and blend the two)

**Questions to Be Answered** (Answers supplied by conference participants):

1. *What are the goals of coordinating vocational and academic education?*

   Could be different in different places.
   Improve student performance.
   Address needs of whole child.
   Address needs of society.
   Unify education.
   Obey the law - because CPA says we need to.

Make learning more relevant.
Better educated student.
Higher test scores.
More mature choices.
Satisfy industry.
Better work force.
Education for global society.
Competencies necessary for success in life.
Improve relationship thinking.
Retention of students.
Develop a work force.
Eliminate tracking.
Cure ills in education.
Decrease stigma of vocational education.

2. *What questions need to be asked?*

Does integration work?
Was there a change in student outcomes?
How to do this within our means?
What will be integrated?
What is the effect of integration?
How well do different models work under different conditions (e.g., urban or rural, low SES, etc.?
How are we going to get the big picture of integration?

3. *What criteria could be used?*

Drop out rate/graduation rate.
Teacher satisfaction.
Employment.
Change in student attitude/enthusiasm.
Higher level thinking skills.
Transfer of knowledge.
Enrollment changes.
Attendance.
Satisfied employers.
Increase in test scores.
Lower unemployment.
Better trained graduates (also educated).
Teachers that teach student instead of content.
Less drug abuse.

# 8th Grade Pre-Vocational Program for At-Risk Students

*Dianne Petty*
Academic Teacher
Plano ISD

*Lolly Flores*
Academic Teacher
Plano ISD

Topic C8

# Integrating Academics
# And
# Vocational Programs

I. Introduction

II. Background, History, Origin

III. Outline Program

IV. Identification

V. Forms

VI. Typical Day

# PRE-VOCATIONAL PROGRAM

## academics\vocational

# Table of Contents

I. Mission Statement

II. Forms

- A. Initial Referral
- B. Comprehensive Assessment Survey
- C. Student Profile
- D. Parent Letter
- E. Parental Consent
- F. Pre-vocational Program Policies
- G. Rules
- H. Discipline Guidelines
- I. Vocational Segment Information Sheet
- J. Intake Meeting Checklist
- K. Dismissal Form

III. Class Schedule

## PRE-VOCATIONAL PROGRAM MISSION STATEMENT

The mission of the Pre-Vocational Program is to produce responsible students that are able to return successfully to the main stream and continue being successful as they move through their academic program toward graduation.

**Goals:**

1. By the end of a students tenure he/she will be demonstrating success in academics, wood shop, and functioning successfully in horticulture.
2. To have 100% of our students demonstrate responsible citizenship and good character.
3. To have 100% of our students exhibit good work habits and be responsible for their actions.
4. To have students recognize their vocational abilities through completion of wood projects and working successfully in the horticulture.
5. To achieve support within the school district as well as the community for the projects and services of the pre-vocational program.
6. To return students in a positive frame of mind to the main stream where they will be successful.
7. To raise the awareness of all pre-vocational students about the academic and vocational services available in the high school.
8. To exhibit mastery of the essential elements in science, history, english, and math.

**Strategies:**

1. We will integrate the teaching and practice of citizenship and good character into every aspect of the curriculum and all our activities.
2. We will work to teach good work habits and have students exhibit the qualities of self responsibility.
3. We will work to continue to add horticulture and wood project customers so as to supply a source of revenue to enable us to pay students for work completed.
4. We will work with each student on an individual basis in order to help the student work to his/her ability and improve decision making skills.
5. We will communicate with the student, the parents, and the home school personnel to ensure that the student is progressing to his/her maximum.
6. We will refer students to special programs or other personnel as needed.
7. We will monitor the mastery of the essential elements on an individual basis through formal and informal evaluations.
8. We will assist in the proper placements of pre-vocational students in high school programs.
9. We will demonstrate the value of an education to all pre-vocational students.

# INITIAL REFERRAL
## Telephone Screening Sheet

Student's Name ______________________________ Age ________ Grade __________

School __________________________ School Contact ______________________________

_____ Campus Intervention Team meeting has taken place.

_____ Student meets criteria (list below).

1.

2.

3.

_____ Previous action taken by school

_____ Special Education testing

_____ PASP testing

_____ Other

_____ List student's I.T.B.S. scores for

Math __________

English ________

_____ Is this student a discipline problem?

_____ Intake meeting is set for (date) ______________________________________________

_____ School will notify parents to attend meeting.

_____ School contact will bring the following reports:

_____ Completed Student Profile Form
_____ All discipline records
_____ Current course grades
_____ Previous action taken by school
_____ Recommendation from the Campus Intervention Team

_____ Inappropriate referral. Pre-vocational made the following recommendations:

1.

2.

3.

# COMPREHENSIVE ASSESSMENT SURVEY

NAME:______________________________________________

GRADE:______________ TEACHER:______________________________

The above named student is being reviewed because of the following reasons:

___ Has not been promoted one or more times in grades 1–6
___ Is currently failing ______________
___ Failed the ______________ portion of the TEAMS
___ Is currently functioning one year or more below grade level in language arts, reading, or math
___ Exhibits other social, developmental, or psycho-social factors which are contributing to failure

The building comprehensive assessment team has met and recommends the following:

___ Placement in a continuous progress program
___ Tutorials
___ Modification of time and subject requirements
___ Referral to special education
___ Referral to PASP
___ Referral to Chapter I services
___ Referral to bilingual/ESOL
___ Referral to TRAC
___ Referral to counseling
___ Summer school
___ Williams High School Alternative Program for District grades 7–8
___ Evening school
___ Referral to parent education program
___ G.E.D. program
___ Referral to truancy program
___ Referral to drug/alcohol education program

Comments: ______________________________________________

______________________________________________

______________________________________________

______________________________________________

Reviewed: ______________________________________________

______________________________________________

# STUDENT PROFILE

Student ______________________ Grade __________ Group ______________
Age ______________ Birthdate ______________

1. Grades: Last year - L.A./Eng. ______________ Math ______________
Science ______________ Soc.Studies ______________

2. Grades: This year - L.A./Eng. ______________ Math ______________
Science ______________ Soc. Studies ______________
Other ______________ Other ______________

3. Aptitude: __________ (Test ______________, Year ______________)
(Test ______________, Year ______________)
Verbal __________
Non-verbal __________
Quantitative __________
Full Scale __________

4. Achievement Test Scores: Total Language ______________ Work Study __________
Vocabulary ______________ Reading __________
Math Concepts ______________
Math Problems/Computations ______________

(Do aptitude and achievement align? ______________________)
(Do aptitude/achievement/and grade scores align? ______________________)
Note the problem or inconsistencies areas ______________________

5. Study Skills:
a. Is the student dependable in completion of assignments:

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Never completes work | | | | | | Always completes work |

6. Emotional Health:
Are there home concerns? ______________________
Does the child have a positive self-image? ______________________

7. Attendance this year and last year:

Excused ______________ Unexcused ______________

Is there a significant difference between years? ______________________
Note absences and tardies in excess ______________________

8. Is the student in a special program? Special Ed ______________
PASP ______________
Tutoring ______________
Speech ______________
Other ______________

9. What strengths does this student have?

reading ____________
attention span ____________
social skills ____________
math ____________
spelling ____________
listening skills ____________
on-task behavior (stick-to-itiveness) ____________
ability to understand and apply general concepts ____________

writing ____________
independence ____________
organization ____________
motivation ____________
completion of assignments ____________

10. What weakness does he have?

reading ____________
attention span ____________
social skills ____________
math ____________
spelling ____________
listening skills ____________
on-task behavior (stick-to-itiveness) ____________
ability to understand and apply general concepts ____________

writing ____________
independence ____________
organization ____________
motivation ____________
completion of assignments ____________

11. Is he involved with extra curricular activities? If so, what? ____________

12. Is he involved with the community in other ways? ____________

13. Any health concerns? ____________

14. What interventions have been tried? ____________

**PLANO INDEPENDENT SCHOOL DISTRICT**

1517 Avenue H Phone 881-8100
PLANO, TEXAS 75074-5898

Dear Parent:

Your student will begin the Pre-vocational Program on ______________________. The program area is located on the north side of the Williams High School campus at 1717 17th Street. While in this alternative setting, your student will receive instruction in Math, Science, English, History, and vocational training. He/she will need to bring school books, pens, and paper.

School begins at 8:30 a.m. and ends at 3:30 p.m. We ask that your student come directly into the Pre-vocational Center. The center will be open at 8:00 a.m. Pre-vocational students are not allowed to spend time in the Williams parking lot before school starts. Students will, however, have access to the Williams cafeteria for lunch.

Attendance will be kept here and reported to the home school. If your student is to be absent, please call 578-0143 to report the absence before 9:00 a.m.

As parent or legal guardian of this student you will be expected to provide transportation to and from school and to attend parent/teacher/student conferences. We plan to make this experience as positive and helpful for your student as we can. If you have questions, please feel free to call us.

Sincerely,

PRE-VOCATIONAL STAFF

Academic
Dianne Petty and Lolly Flores

Vocational
Gary Woody, Terry Combs and Donna Morris

Student's Name ______________________________ Date ______________

Age ____________ Date of Birth ______________________________

Home School ______________________________ Grade ______________

School Contact Person ______________________________

Parents ______________________________

Address ______________________________ Zip Code ______________

Home Phone ____________ Mom's Work # ____________ Dad's Work # ____________

| Current Course Schedule and Status | Current Grades |
|---|---|
| 1st Per: | |
| 2nd Per: | |
| 3rd Per: | |
| 4th Per: | |
| 5th Per: | |
| 6th Per: | |
| 7th Per: | |

**Parental Consent:**

I hereby give the staff at the Prevocational Center permission to use all resources available through Plano Independent School District to devise an ongoing intervention program for my son/daughter. This may include drug/alcohol preassessments and other assistance available through the Plano I S D Student Services Department. There will be ongoing contact with parents to report on any activity of this nature.

______________________________
Parent's Signature

______________________________
Student's Signature

______________________________
Intervention Team Chairman's Signature

______________________________

______________________________

______________________________

Student's starting Date: ______________________________

## PREVOCATIONAL PROGRAM POLICIES

Acceptance into this Program is a privilege. You will be expected to follow the same rules that apply at your home campus. We have certain expectations outlined as follows:

1. Be on time. Be in your seat at 8:30 a.m.

2. Complete assignments and allow other students to complete theirs.

3. Observe program rules:

   a. Remain in the building throughout your school day.
   b. Follow District dress code.
   c. Do not smoke in the school building or on school property. No tobacco products are allowed in school. Products will be confiscated.
      1) First offense: parental contact with 1-day placement in inschool suspension.
      2) Second offense: parental conference and a 2-day placement in inschool suspension.
      3) Third offense: parental conference with possible placement in the TRAC program or returned to home campus.
   d. Do not mark, write, or carve on walls, chairs, desks, floors, doors, etc.
   e. Do not loiter in the high school parking lot before or after school hours.
   f. Observe break-time; return to class on time.

Failure to comply with these Prevocational Program policies may result in your dismissal from the Program. By meeting these expectations, you invest in your success in the Prevocational Program.

## Williams Pre-Vocational

---

This program is set up to receive only those students in need of an alternative setting due to an inability to successfully perform in the regular school environment. This program is an extension to alternative education.

Students will adhere to the Williams Pre-Vocational guidelines.

1. Students are expected to come to school with a positive, productive attitude.

2. Pre-Vocational teachers will instruct the students. Students can expect the course work to differ somewhat from that on their home school campus.

3. Students are expected to cooperate with teachers and to complete all asignments. Arguing with the teachers will not be tolerated.

4. School begins at 8:30. When students arrive on campus, they must immediately enter the building. All restroom needs must be taken care of before entering the classroom. Once students are in the classroom, they cannot leave.

5. Students are expected to bring all of their materials to class every day (paper, pens, notebooks, etc.)

6. Each student is expected to keep his/her desk and area neat and clean. Students do not mark or carve on anything in the building (bathroom, desks, chairs, walls, etc.). Students are expected to sit with their feet on the floor and facing their own desks unless otherwise instructed by the teacher.

7. Phones are off limits to students. If students require the use of a phone, they must ask for permission to use the office phone. Students do not use the phone during class hours.

8. Students are expected to follow the District's dress code; it will be enforced. This means no tank tops, dog collars, spiked jewelry, and no shirt with alcohol, profanity, drug, or offensive symbols will be allowed.

9. The District attendance policy will be enforced. Excessive absences will be handled through truancy court.

10. Smoking is not allowed in the school building or on the school campus. The campus consists of the parking lot, tennis courts, and all property around the building.

11. Failure to follow the Williams Pre-Vocational guidelines may result in your dismissal from the program. By meeting these expectations, you invest in your success.

BEST COPY AVAILABLE

## Discipline Guidelines. Williams Pre-Vocational

---

1. Inappropriate behavior will be handled by the teacher through primary action as the teacher sees fit.
    a. Teacher asks the student to cease.
    b. Any other creative method which the teacher may want to employ (seating arrangement, etc.).

2. If the student continues inappropriate behavior after primary action, the following procedure will be followed by the teacher:
    a. Student sent to time-out area.
    b. Student will remain in time-out area until released by teacher.
    c. Student must remain quiet and in control while in the time-out area.
    d. If student will not follow time-out guidelines, he/she will be sent to disciplinarian in charge who will automatically assign a half-hour detention.
    e. Severe discipline infractions will be referred immediately to disciplinarian in charge (profanity to teacher; posing physical threat to teacher, other student, self: violation of District drug/alcohol policies).
    f. A repetition of inappropriate or disruptive behavior will result in a parent/teacher phone conference.
    g. Any further problems will require an in-building parent/teacher conference.
    h. If necessary a Central Intervention meeting will be held. This could result in the following action:
        1. Home school meeting in order to return student to home campus.
        2. TRAC placement for further disciplinary action.

3. Smoking
    a. First offense - Teacher/student conference; parent notified.
    b. Second offense - In-building parent/teacher conference.
    c. Third offense - Central Intervention meeting which could result in the following:
        1. Return to home school.
        2. TRAC placement.

4. Student will be sent home only as a last resort (parent will be notified before the student is sent home).

5. The goal of these guidelines is to help the student:
    a. Work through his/her problems.
    b. Face the consequences of his/her behavior.

I understand the guidelines of the Williams Pre-Vocational program.

________________________________________ _______________
Parent's Signature Date

________________________________________ _______________
Student's Signature Date

# PRE-VOCATIONAL PROGRAM

## VOCATIONAL SEGMENT INFORMATION SHEET

For students to be properly enrolled in the vocational segment, this form **MUST** be accompanied with the students official class schedule from their home school and a photo copy of the students social security card.

STUDENT NAME ______________________________

ADDRESS ______________________________ PHONE # __________

BIRTHDATE __________ GRADE _____ HOME SCHOOL ______________________________

HOME SCHOOL COUNSELOR ______________________________

SOCIAL SECURITY # ______________________________

PERMANENT ADDRESS ______________________________

PARENT'S NAME ______________________________ HOME PHONE# __________

______________________________ WORK PHONE # __________

## SAFETY AND PROCEDURE INFORMATION

I understand that in the vocational segment, when the students are in the wood shop they are expected to wear eye safety protection as well as utilize all safety features on all equipment and exhibit safe behavior in the shop and horticulture areas at all times. I also understand that in horticulture the students may be working in the greenhouse or on another campus. I understand the students must work each day in a safe, conscientious manner and exhibit good behavior as would be expected of a/an student/employee. I understand that the students will be paid on the 15th of the month following the month worked or the month following the sale of projects. I understand that students will not be paid for projects completed until projects have been sold and money has been collected by the Pre-voc Program. I also understand that students **WILL NOT** by paid until all paperwork required for employment by PISD has been properly completed and a copy of social security card and official class schedule are on file.

STUDENT ______________________________

PARENT ______________________________

DATE ______________________________

# Checklist
# Intake Meeting

___ Voluntary

___ Do not provide transportation

___ Three-week trial

___ Student evaluation after 3 weeks
-return to home campus
-remain in the program

___ Evaluated at the end of next six weeks

___ Most students will remain for one semester

___ Half day academics - English, math, history, science

___ Half day vocational - woodworking, horticulture, life skills
-can receive money in woodworking and horticulture

___ Academics comes first

___ Must complete all assigned work - accept no zeroes

___ If work is incomplete/needs to be reworked - student will be called out of afternoon classes

___ This program doesn't affect 9th grade placement

___ This program is not special education or PASP - we teach the regular 8th grade curriculum

___ Lunch is between Williams A and B lunches

___ Students are not allowed in Williams except for lunch and life skills

___ Discipline - see handout

___ Need a social security card - not just the number

___ Free/Reduced price lunch

___ Smoking

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# Pre-Vocational Dismissal

___ Re-entry to home school ___ High school placement

Student's Name ____________________________ Age ____ Grade ____

School ____________________________ School Conta ________________

________________________ has been assigned to the Pre-vocational program since __________________ . ____________________________ will return to ________________________ on ______________ .

We propose the following recommendations to promote continued success:

1. If possible assign an adult mentor.
2. Place student on a daily assignment sheet.
3. Involve parents often, positively or negatively.
4. ____________________________________________________
5. ____________________________________________________

Respectfully,

Pre-vocational Academic Staff

Lolly Flores

Dianne Petty

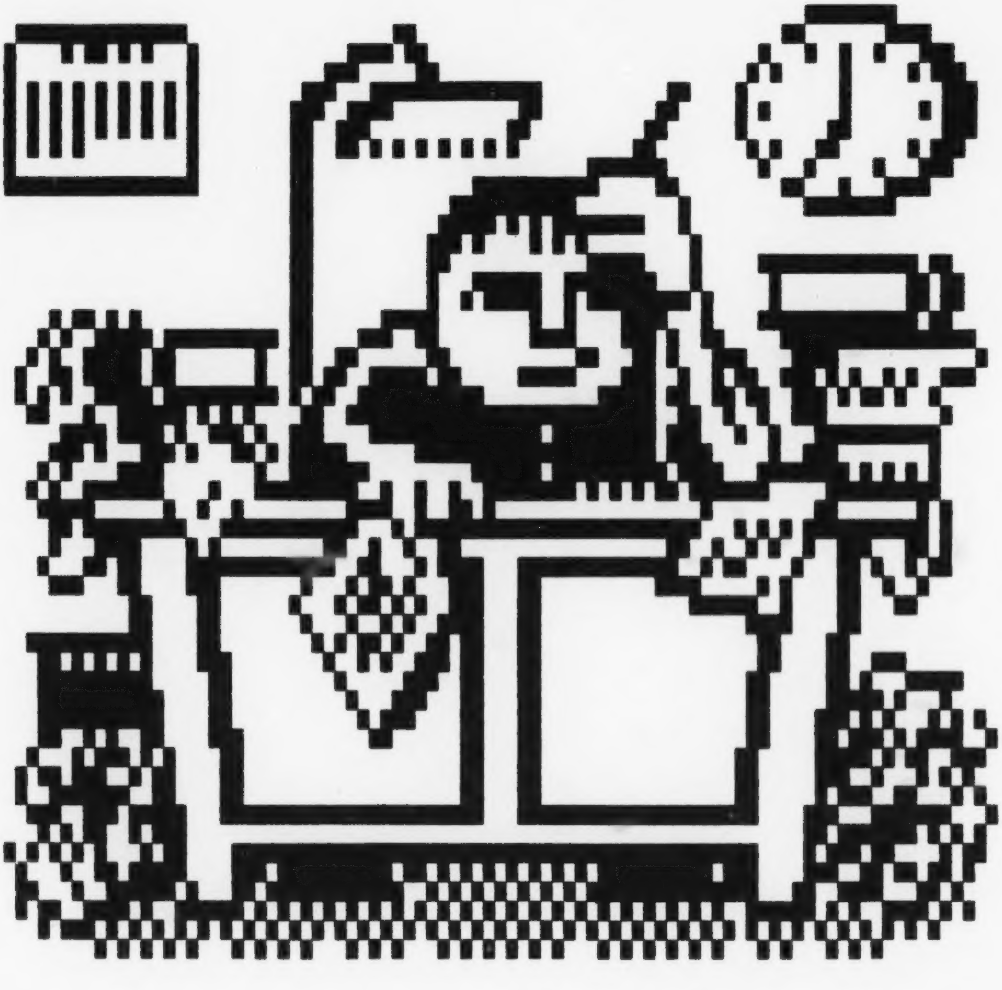
Comments:

# PRE-VOCATIONAL CLASS SCHEDULE

| | | |
|---|---|---|
| 1ST. PERIOD | 8:35-9:25 | ENGLISH/EARTH SCIENCE |
| 2ND. PERIOD | 9:35-10:25 | EARTH SCIENCE/ ENGLISH |
| 3RD. PERIOD | 10:35-11:25 | MATH/AMERICAN HISTORY |
| 4TH. PERIOD | 11:35-12:20 | AMERICAN HISTORY/MATH |
| LUNCH | 12:25-1:00 | |
| ACTIVITY PERIOD | 1:00-1:30 | ACTIVITIES |
| 5TH PERIOD | 1:30-2:30 | LIFE SKILLS/VOCATIONAL/ACADEMIC TUTORING |
| 6TH PERIOD | 2:30-3:30 | VOCATIONAL: WOODWORKING/HORTICULTURE |

***SCHEDULE IS SOMEWHAT FLEXIBLE DUE TO THE NATURE/SETUP OF THIS PROGRAM.**

# IDENTIFICATION



# Table of Contents

I. Reasons For Identification

II. Assessment/Implementation of Strategy

III. At-Risk Identification

## REASONS FOR AT-RISK IDENTIFICATION

1. Ability/Aptitude
2. Lack of Effort/Motivation
3. Language Problems
4. Poor Educational Background
5. Improper Grouping/Placement
6. Frequent Moves
7. Behavior Problems
8. Attendance

## ASSESSMENT/IMPLEMENTATION OF INTERVENTION STRATEGIES

1. Identification (Classroom teacher)
    a. Identify by stated criteria
    b. Refer to building assessment team (Student presently in danger of failing course)

2. Assessment of Needs - Building Assessment Forms
    (Principal, Team Leader, Counselor, Support Personnel)

3. Determination of Student's Remediation Needs
    - intensive remediation in language arts, reading and math by increasing time allotments
    - tutorials
    - Plano Academic Support Program
    - summer school
    - counseling
    - peer tutoring
    - parent involvement
    - referral to special education
    - Chapter I services (where available)
    - TRAC (I–IV)
    - Williams Pre-vocational Program for Middle School Students grades 7–8
    - evening school
    - parenting program
    - G.E.D. program
    - truancy program
    - drug/alcohol education program

4. Notification of Parents/Guardian

5. Implementation of Program

# AT-RISK IDENTIFICATION

## Grades 1–6

1. Have not been promoted one or more times in grades 1–6

2. Have failed one or more basic subjects (language arts, math, science, or social studies) at any six-weeks. To be reviewed each six-weeks

3. Have failed to meet mastery requirements on any of the three areas of the most recent TEAMS test

4. Are one year or more below grade level in language arts, reading, or math

5. Exhibit other social, developmental, or psycho-social factors which contribute to the student's ability to progress academically

Additionally:
Any student in danger of failing a course or who is not being successful for any reason may be considered as "at-risk" and be referred to the building assessment team.

## Grades 7–8

1. Have not been promoted one or more times in grades 1–6

2. Are two or more years below grade level in reading or mathematics

3. Have failed at least two courses in one or more semesters

4. Have failed to meet mastery requirements on any of the three areas of the most recent TEAMS test

5. Exhibit other social, developmental, or psycho-social factors which contribute to the student's inability to progress academically

Additionally:
Any student in danger of failing a course or who is not being successful for any reason may be considered as "at-risk" and be referred to the building assessment team.

### Grades 9–12

1. Have not been promoted one or more times in grades 1–8 and continues to be unable to master the essential elements at their level

2. Are two or more years below grade level in reading or mathematics

3. Have failed at least two courses in one or more semesters and are not reported to graduate within four years of the time they entered the ninth grade

4. Have failed to meet the mastery requirements in any of the three areas of the most recent TEAMS test

5. Exhibit other social, developmental, or psycho-social factors which contribute to their inability to progress academically

Additionally:

Any student in danger of failing a course or who is not being successful for any reason may be considered as "at-risk" and be referred to the building assessment team.

# Integration of Academics and Vocational Education
# "West of the Pecos Style"

*Steve Forsythe*
Agriscience Instructor
Department Chair
Ysleta Agriscience Department
El Paso, Texas

Topic C9

# Integration of Academics and Vocational Education
# "West of the Pecos Style"

Steve Forsythe
Ysleta ISD

Effective learning has to be in the local context. The population of El Paso is 62,000; the population of Ysleta ISD is 48,000. In Ysleta ISD, 73-75% of the population are single parent families, and there is a large senior citizen population. The median income is $7,000 to $10,000. Jobs are changing; there is a trend toward continual urbainzation. "White flight" exists, and there are new groups moving in. Most are limited English proficient and poor. About 23,000 to 25,000 people have no running water or sewer. The Colonias are unregualted neighborhoods, with no good drinking water wells. There is water rationing; there are 35 "water cops." El Paso is the most unsafe city in the world; it is half a mile from the Mexican border where there are no pollution regulations. Along with the water situation, there is a great deal of air pollution.

In their Agriscience course, students interview the Colonia people about their environment. The English teacher works with the students on grammar. For one assignment, they get credit in both Agriscience and English. Teachers stress leadership skills, responsibility, and public speaking.

Both teachers coordinate their curricula. In discussing air quality and quality of life, the English teacher assigns *The Jungle* by Upton Sinclair. In Agriscience, students compare the quality of life in El Paso with another U. S. city. They consider the environment, education, parks, etc. They interview citizens and prioritize the quality of life issues.

Other topics covered include the preservation of national resources and the National Trade Agreement. Students developed and conducted a survey where they examined how lifting trade embargos would affect the El Paso environment. Thought questions that affect daily life are stressed.

# Incorporating Language Arts into Vocational Classrooms

*Debbie Johnson*
Home Economics Coordinator
Taft High School
Northside ISD

*Rebecca Miller*
English Teacher
Taft High School
Northside ISD

Topic C10

# THE WRITING PROCESS

"How can I know what I think until I see what I say?" E.M. Forster

Writing is a key to understanding.

- Writing improves retention.
- Writing increases understanding.
- Writing facilitates evaluation, synthesis, and analysis.

The Writing Process

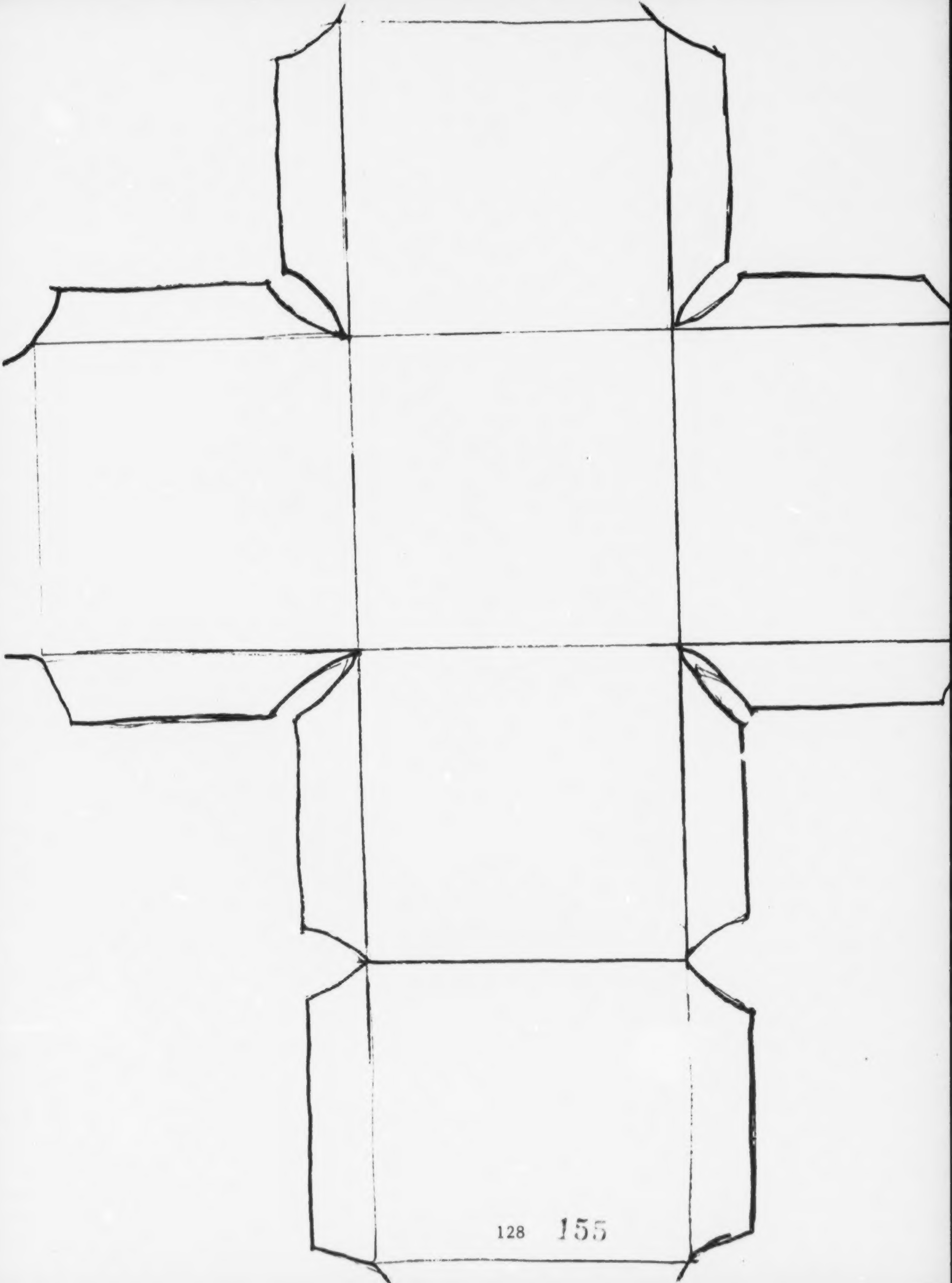
- Prewriting
  - Writing to learn-notetaking
    - responding
  - Idea generation-brainstorming
    - clustering
    - free writing
    - cubing

- Writing
  - Composing
  - Organizing
  - Audience analysis

- Postwriting
  - Editing
  - Revising

Applying the Process

| | |
|---|---|
| Response Journals | |
| What happened? | Lesson Learned |
| Student response? | Problem Confronted |
| | Problem Solved |
| | Relating to Others |
| Class Anthology | |
| Writing for publication | On-the-Job Lessons |
| | Guide for Beginners |
| | Funniest Experience |
| | Colorful Characters |
| Writing on the Job | |
| Children's Book | Qualities of Short Stories |
| | Descriptive Writing |
| | Narrative Writing |
| | Audience Analysis |



# GUIDELINES FOR WRITING YOUR CHILDREN'S BOOK

1. Assignment must be in book form. Size will vary, but the book must be bound in some manner and have a sturdy cover.
2. Books written on notebook paper will not be accepted.
3. Books must be at least sixteen pages in length. Each of the sixteen pages must contain an illustration or portion of the story line.
4. In addition to the sixteen actual pages, you must include a title page, an author's page, and an end sheet.
5. Books must be illustrated in some manner.
6. Books will be graded according to the following criteria:
    a. Originality and creativity.
    b. Story line: Does it incorporate the elements of the short story?
    c. Illustrations: Do the illustrations enhance the story?
       Are they colorful?
       Are they appropriate for your audience?
    d. Format: Is the book attractive?
       Is the writing legible and neat?
       Are all errors in spelling and/or punctuation eliminated?
7. WHTKL Award Presentation: Once all books are in, they will be considered as nominees for the William Howard Taft Kiddie Lit Awards. These awards are both prestigious and sought-after! Awards will be given for story line and illustrations. There will be a first and second place award for each category.
8. GET BUSY! HAVE FUN! BOOKS WILL BE DUE ON _______________!

## Writing to Learn in the Content Areas

Although the English teacher may choose to integrate learning to write and writing to learn, teachers in other content areas using the writing to learn approach should not dwell on grammar, spelling, or other technical aspects of language. The general rule should be: *If it does not interfere with clarity of meaning, ignore it.* The demands of learning content require that technical matters be de-emphasized except where they interfere with the clear transmission of ideas. This is not to say that a teacher could not reasonably expect students to spell correctly those terms that are unique to a given content area, e.g., in biology such terms as "mitosis" and "osmosis." Each teacher must decide when a given technical error is worth bringing to the student writer's attention. But under no circumstances should the teacher read through a student's paper deliberately looking for each misspelling, comma fault, or missing period. In evaluating writing, there is a tendency to slip into this habit, rather than to evaluate the quality of the content.

The teacher using the writing to learn approach needs to be concerned with ideas and their clear presentation. Evaluation should be based on the completeness, logic, and clarity of the thoughts expressed. Teachers need to determine whether the student writer understands what he is writing about; whether the information cited is correct, complete, and logically presented; and whether the work reflects real thought on the part of the student. If teachers conduct this type of evaluation of student writing, there is simply not time to deal with the mechanics of writing.

In a well-articulated program there should be cooperation between the faculty involved in teaching the mechanics of writing and those using the writing to learn approach in the content areas. For example, a science teacher concerned about a grammatical problem in a student's lab report might refer the problem to the appropriate English teacher. This puts the English teacher in the unique position of helping students both to learn to write and to write to learn; the problems inherent in balancing those two roles will be addressed elsewhere in this fastback.

Student writers should also be aware that they write for a variety of audiences: teachers, themselves, other students, and assorted other individuals. When using the writing to learn approach, it is the responsibility of the content area teacher to ensure that students know for whom they are writing. It is the English teacher's role to ensure that, once the audience is known, the student has some idea of how to proceed.

What can teachers do in their classrooms to capitalize on the writing to learn approach? There are dozens of ways to integrate writing activities into content areas at the secondary level. The following list by Stephen Tchudi has a method applicable for every content area:

**Content Area Writing Activities***

- Journals and diaries (real or imaginary)
- Biographical sketches
- Anecdotes and stories: from experience, as told by others
- Thumbnail sketches:
  - of famous people
  - of places
  - of content ideas
  - of historical events
- Guess who/what descriptions
- Letters: personal reactions, observations, informational persuasive:
  - to the editor
  - to public officials
  - to imaginary people
  - from imaginary places
- Requests
- Applications
- Memos
- Resumés and summaries
- Poems
- Plays
- Stories
- Fantasy
- Adventure
- Science fiction
- Historical stories
- Dialogues and conversations
- Children's books
- Telegrams
- Editorials
- Commentaries
- Responses and rebuttals
- Newspaper "fillers"
- Fact books or fact sheets
- School newspaper stories
- Stories or essays for local newspapers

*From Stephen Tchudi and Joanne Yates, *Teaching Writing in the Content Areas: Senior High School* (Washington, D.C.: National Education Association, 1983), p. 12. Used by permission.

## Home Economics

Once characterized by cooking, sewing, and personal care, home economics today covers myriad topics, from design and fashion merchandising to consumerism and family relationships. Today's broad home economics curriculum has many opportunities for the use of writing in the classroom.

### Television Script Writing

Students might develop their own "Galloping Gourmet" 30-minute television program for a unit on foods and cooking. In developing the script and commercials for such a program, students would learn a great deal about food and videotape production. Students would need to understand thoroughly the recipe and the process involved to develop a clear and complete written script, and they would be forced to consider what is happening as the process is followed. Camera directions are needed, and the dialogue must be coordinated with the action. If commercials are also included, there will be opportunity for creative humor. To develop a 30-minute program, students would have to pay attention to timing and make a careful selection of words and content. Such an experience would be enjoyable for students; and it would complement units of study that deal with television, advertising, and cooking.

### A Day in the Life of. . .

As students investigate the career possibilities in home economics, a good activity is to ask them to research thoroughly a career field of their choice and then to write a narrative describing a fictional workday for themselves in that role. In order for such a narrative to be accurate, the writer will need a thorough understanding of the career field and its everyday expectations. Someone writing about being a dietitian in a nursing home will need to investigate thoroughly that role in order to write effectively about it; the interested student might wish to interview a dietitian to gain first-hand insight into the job. Such a writing assignment requires a high degree of organizational skill, knowledge of the terminology used in that career area, and clear descriptive prose. In completing such an assignment, the student will gain a great deal more insight than could come from simply reading about the career. Writing about the career field in concrete terms makes the assignment personally relevant.

### Written Reactions to Films

There are many excellent films available on aging and family relationships for use in home economics classrooms. One example is *Peege* (1974), which is about a family's Christmas visit to their stroke-crippled grandmother, nicknamed "Peege," who lives in a nursing home. It is a moving film about love and the roles grandmothers play in our lives, as seen through the eyes of the family members. It frequently brings tears to the eyes of students and forces students to think seriously about their own family relationships. This kind of film makes students want to react in writing at a personal level and to re-examine their relationships with parents and grandparents. While the writing serves as an excellent prelude to class discussion, it is a highly relevant personal learning experience in itself. Such a writing exercise is well suited to a personal journal that is read by the teacher only at the invitation of the student. Such private writing encourages personal growth.

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## Closing Remarks

*Patricia S. Lynch*
Texas A&M University

General Session

## Closing Remarks

Patricia S. Lynch
Texas A&M University

The turnout for this workshop was great. There were over 180 participants; considering that this workshop was not highly publicized, this indicates a great interest in helping students by integrating academic and vocational education.

The ten presenters who discussed ways they were integrating academic and vocational education in their districts were just a sampling. Although this integration is a new initiative from the Carl D. Perkins Vocational and Applied Technology Education Act, some schools have already realized the benefit to their students and are implementing integration programs. Many of the exciting things happening in the state are the result of good teachers who get together with each other and work together to make school more relevant for their students. They are driven by concern for their students rather than by legislation.

We hope that this workshop is just a beginning, and that people attending go back and try new things in their districts. Share what has been learned with others and continue to work to improve the education of students and make them aware of how all subjects they are taught fit together and apply in the real world.

## Integrating Vocational and Academic Education Workshop
## EVALUATION FORM

Please rate each session that you attended by circling the appropriate number. A rating of 1 is the lowest and 5 the highest. Please feel free to make any comments on the back of this form. Thank you.

| **THURSDAY SESSIONS** | low | | | | high |
|---|---|---|---|---|---|
| Keynote Address - Jerry Pepple | 1 | 2 | 3 | 4 | 5 |
| Group Working Session | 1 | 2 | 3 | 4 | 5 |
| **FRIDAY SESSIONS** | | | | | |
| Featured Speaker - Michelle Sarkees-Wircenski | 1 | 2 | 3 | 4 | 5 |
| TEA Panel Presentation | 1 | 2 | 3 | 4 | 5 |
| Topic C1 - Mary Hendrix | 1 | 2 | 3 | 4 | 5 |
| Topic C2 - Cam O'Keefe | 1 | 2 | 3 | 4 | 5 |
| Topic C3 - Mark Kincaid | 1 | 2 | 3 | 4 | 5 |
| Topic C4 - Tony Bertucci | 1 | 2 | 3 | 4 | 5 |
| Topic C5 - Don Westbrook | 1 | 2 | 3 | 4 | 5 |
| Topic C6 - Jerry Wircenski | 1 | 2 | 3 | 4 | 5 |
| Topic C7 - Jerome Kapes | 1 | 2 | 3 | 4 | 5 |
| Topic C8 - Dianne Petty | 1 | 2 | 3 | 4 | 5 |
| Topic C9 - Steve Forsythe | 1 | 2 | 3 | 4 | 5 |
| Topic C10 - Debbie Johnson | 1 | 2 | 3 | 4 | 5 |
| **MISCELLANEOUS** | | | | | |
| Pre-registration Procedures | 1 | 2 | 3 | 4 | 5 |
| Registration Procedures | 1 | 2 | 3 | 4 | 5 |
| Conference Site | 1 | 2 | 3 | 4 | 5 |
| Reception (Thursday evening) | 1 | 2 | 3 | 4 | 5 |
| Luncheon (Friday) | 1 | 2 | 3 | 4 | 5 |

## Integrating Vocational and Academic Education Workshop
## EVALUATION SUMMARY

articipants were asked to rate each session attended from 1 (low) to 5 (high). Mean esponses and number of responses are reported below.

### HURSDAY SESSIONS

| | | |
|---|---|---|
| eynote Address - Jerry Pepple | 3.53 | N = 47 |
| roup Working Session | 3.76 | N = 49 |

### RIDAY SESSIONS

| | | |
|---|---|---|
| eatured Speaker - Michelle Sarkees-Wircenski | 4.80 | N = 49 |
| EA Panel Presentation | 2.97 | N = 37 |
| opic C1 - Mary Hendrix | 4.29 | N = 24 |
| opic C2 - Cam O'Keefe | 4.40 | N = 10 |
| opic C3 - Mark Kincaid | 4.43 | N = 7 |
| opic C4 - Tony Bertucci | 3.78 | N = 9 |
| opic C5 - Don Westbrook | 4.62 | N = 13 |
| opic C6 - Jerry Wircenski | 3.90 | N = 21 |
| opic C7 - Jerome Kapes | 3.46 | N = 13 |
| opic C8 - Dianne Petty | 4.70 | N = 10 |
| opic C9 - Steve Forsythe | 4.00 | N = 9 |
| opic C10 - Debbie Johnson | 4.50 | N = 16 |

### ISCELLANEOUS

| | | |
|---|---|---|
| re-registration Procedures | 4.64 | N = 44 |
| egistration Procedures | 4.52 | N = 33 |
| onference Site | 4.44 | N = 48 |
| eception (Thursday evening) | 2.49 | N = 37 |
| uncheon (Friday) | 4.51 | N = 43 |

# Appendix A

*Workshop Participants*

# Integrating Academic and Vocational Education Workshop
# April 18-19, 1991

## Speakers

| | |
|---|---|
| Jerry D. Pepple | University of Illinois |
| Michelle Sarkees-Wircenski | University of North Texas |
| Grace Grimes | Texas Education Agency |
| Robert Patterson | Texas Education Agency |
| Mary Hendrix | East Texas State University |
| Cam O'Keefe | University of Texas - Austin |
| Clif Wendel | Round Rock ISD |
| Karen Kamenzind | Round Rock ISD |
| Susan Schwausch | Round Rock ISD |
| Mark Kincaid | Leander ISD |
| Tony Bertucci | Austin ISD |
| Don Westbrook | Goose Creek Consolidated ISD |
| Sherri Frost | Goose Creek Consolidated ISD |
| Jerry Wircenski | University of North Texas |
| Jerome Kapes | Texas A&M University |
| Dianne Petty | Plano ISD |
| Lolly Flores | Plano ISD |
| Steve Forsythe | Ysleta ISD |
| Rebecca Miller | Northside ISD |
| Debbie Johnson | Northside ISD |
| Daisy Whisenant | Northside ISD |

## Participants

### Silver Group

| | |
|---|---|
| Roberta Abelman | San Antonio ISD |
| Pamela Fails | Lexington High School |
| Gwen Keefer | Canutillo ISD |
| Judy Wall | Fort Worth ISD |
| Ann Laquey | Region XIII ESC |
| Diane Taylor | Angleton ISD |
| Delmar Day | Jacksboro High School |
| Billy White | Haltom High School |
| Dennis Freeman | West Hardin CISD |
| Loretta Allen | Region XII ESC |
| Sharon Pierce | Texas Education Agency |
| Ken Von Gonten | Belton ISD |
| Ruth Neal | Texas Education Agency |
| Margaret Lindsey - Group Leader | Austin ISD |

## Yellow Group

| | |
|---|---|
| Stephen Harper | Morton ISD |
| Ed Foster | Birdville ISD |
| Mary LeBoeuf | Texas City ISD |
| Donald Bennett | Cleburne ISD |
| Jo Anne McBrayer | New Braunfels ISD |
| Jackie Nolte | Canyon High School |
| Bettie Herring | Fort Worth ISD |
| Marsha Lyons | Austin ISD |
| Jimmie Scruggs | Edgewood ISD |
| Jewel Lockridge | Waco ISD |
| Karen Hibbs | Birdville ISD |
| Linda Valdez | Corpus Christi ISD |
| Susan Tolson | Texas Education Agency |
| Linda Patton - Group Leader | Texas A&M University |

## Red Group

| | |
|---|---|
| Dennis Swanson | Austin ISD |
| Elaine Hall | Goose Creek CISD |
| Doris Henson | Brazos High School |
| Jean Lane | Fort Worth ISD |
| Lugene Tucker | Tyler ISD |
| Jerry Knight | Mansfield ISD |
| Carl Peterson | Lexington ISD |
| C. J. Green | San Antonio ISD |
| Leonard Thielen | McAllen ISD |
| David Childs | Texas Education Agency |
| Laurel Flanagan - Group Leader | Spring ISD |

## Orange Group

| | |
|---|---|
| Fredda Schooler | Morton ISD |
| Norma Jean Borchard | Robstown ISD |
| Edward Kendall | Guthrie ISD |
| Sue Bell | Tyler ISD |
| Travis Winn | Everman ISD |
| Alonzo Wood | College Station ISD |
| Mary Howard | San Antonio ISD |
| Carol Winkler | Lexington ISD |
| Nancy Stout | Midland ISD |
| Jerry Wircenski | North Texas University |
| Diana Gutierrez | Corpus Christi ISD |
| Jack Risinger | Texas Education Agency |
| Sara Nichols | |
| Judy Hetherly - Group Leader | Texas Education Agency |

## Green Group

| | |
|---|---|
| Bob Burkett | Guthrie ISD |
| Thomas Peterson | San Antonio ISD |
| Bobby West | Hutto ISD |

| | |
|---|---|
| Buford Neal | Fort Worth ISD |
| Nancy Chambers | Morton ISD |
| Linda McLain | Eanes ISD |
| Karen Garland | Comal ISD |
| Vivian Eads | Waco ISD |
| Barbara Pinkston | Center ISD |
| Marie Maddox | San Antonio ISD |
| Sherri Frost | Goose Creek CISD |
| Bobby Meigs | Silsbee ISD |
| Cindy Gruner | Texas Education Agency |
| Inez Garcia | Texas Education Agency |
| Susan Kemp - Group Leader | Austin ISD |

## Blue Group

| | |
|---|---|
| Mabyn Day | Silsbee ISD |
| Frank Volhecht | Seguin ISD |
| Jacquelyn Hall | San Antonio ISD |
| Maggie Rice | Leander ISD |
| Sally Black | Goose Creek CISD |
| John Ruth Whitworth | Balcones Special Services Coop. |
| Rick Vaculin | Rockdale High School |
| Tom Gregory | Tyler ISD |
| Leonard Pawlik | Beeville ISD |
| Yvonne Pratt | Graham ISD |
| Carl Reynolds | Gregory Portland ISD |
| Ron Winkelmann | Texas Education Agency |
| Neil Ballard | Texas Education Agency |
| Rick Hernandez - Group Leader | Texas A&M University |

## Neon Yellow Group

| | |
|---|---|
| Sylvia Guerra | Edinburg ISD |
| Helen Berry | Brazos High School |
| Cynthia Norris | Smithson Valley High School |
| Loretta Edmiston | Hutto ISD |
| Judy Beloat | Edgewood ISD |
| John Kinnett | Austin ISD |
| Henry Burgoon | Birdville ISD |
| Jesse Cummings | Fort Worth ISD |
| Don Westbrook | Goose Creek CISD |
| Ken Ford | Graham ISD |
| Travis Hayden | Floresville ISD |
| James Cogdell | Texas Education Agency |
| Estelle Geno | Waco ISD |
| Neil Jeter - Group Leader | Texas Education Agency |

## Black Group

| | |
|---|---|
| Kyle Collier | Morton ISD |
| Wesley Odell | Comal ISD |
| Pat Montgomery | Angleton High School |
| Sherrie Thornhill | Silsbee High School |
| Pam Steen | Tyler ISD |

| | |
|---|---|
| Linda Kelly | Round Rock ISD |
| Ana Tellez-Poland | Region XX ESC |
| Joe Luis Gonzalez | Fox Tech High School |
| William Greer | Fort Worth ISD |
| Bob Patterson | Texas Education Agency |
| Bill Welkener | Austwell-Tivoli ISD |
| Paula Martinez | Corpus Christi ISD |
| Bob Gordon | Texas Education Agency |
| E. Tyrone | Texas Education Agency |
| Rae Wyatt Queen - Group Leader | Spring ISD |

## Gold Group

| | |
|---|---|
| Vondell Keeton | San Antonio ISD |
| Dana Basco | Hutto ISD |
| Al Suttles | Austin ISD |
| Betty Jennings | Houston ISD |
| Helen Smith | Fort Worth ISD |
| Judy Frye | Guthrie CSD |
| Martin Schubert | Lexington ISD |
| Frank Perez | Robstown High School |
| Corky Lockmiller | Hereford ISD |
| Carol Mayo | Northside ISD |
| Ted Henley | Texas Education Agency |
| Bobby LaBouve - Group Leader | Texas Education Agency |

## Neon Green Group

| | |
|---|---|
| Gay Harris | San Antonio ISD |
| Tony Buban | Lexington ISD |
| Marianna Graves | Guthrie CSD |
| Ruth Felty | Northside ISD |
| Jerry Toon | Lancaster High School |
| Vivian Smith | Fort Worth ISD |
| Kenn Heydrick | Austin ISD |
| Gerardo J. Maldonado | San Felipe Del Rio CISD |
| Sara Wilkens | Corpus Christi ISD |
| Dorothy Baum | Texas Education Agency |
| Dinnah Funderberg - Group Leader | Texas A&M University |

## Purple Group

| | |
|---|---|
| Sara Toone English | Graham ISD |
| Otila Gonzalez | San Felipe Del Rio CISD |
| Ray Fortner | Mt. Pleasant ISD |
| John W. Key | Spring Branck ISD |
| Robert Sughrue | Lexington ISD |
| Billie Franke | Austin ISD |
| Dianna Oliver | Jacksboro ISD |
| Don Beeme | El Paso ISD |
| Dee Monroe | Texas Education Agency |
| Gloria Thomas | Texas Education Agency |
| Harold Barclay | La Porte ISD |
| Patricia Lynch - Group Leader | Texas A&M University |

# Appendix B

*Texas Education Agency Staff*
Curriculum and Instruction
Vocational Education

# TEXAS EDUCATION AGENCY
# STAFF
# CURRICULUM AND INSTRUCTION

| Name | Title | Telephone |
|---|---|---|
| **Grace Grimes** | **Assistant Commissioner, Curriculum and Instruction** | **463-9596** |
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| Sunny Thomas | Director of Programs, School Health | 463-9501 |
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| Glenn Peavy | Director of Programs, Driver Education | 463-9556 |
| John Sommer | Director of Programs, Fine Arts | 463-9556 |
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| Sylvia Rendon | Director of Programs, English Language Arts | 463-9585 |
| Sharon O'Neal | Director of Programs, Reading | 463-9585 |
| Cathy Seeley | Director of Programs, Mathematics | 463-9585 |
| Jim Collins | Director of Programs, Science | 463-9585 |
| Louis Grigar | Director of Programs, Social Studies | 463-9556 |
| June Kahler | Director of Programs, Library Services | 463-9660 |
| Marty Urand | Director of Programs, Physical Education | 463-9556 |

Recycled Paper

| Name | Title | Telephone |
|---|---|---|
| **Robert S. Patterson** | **Director, Vocational Education Programs** | **463-9446** |
| Eleanor K. Mikulin | Director of Programs, Special Needs | 463-9443 |
| Jay L. Eudy | Director of Programs, Agricultural Science and Technology | 463-9687 |
| Berry W. Sullivan | Director of Programs, Marketing Education | 463-9443 |
| Barbara Terrell | Director of Programs, Health Occupations Education | 463-9442 |
| Judith A. Hetherly | Director of Programs, Vocational Home Economics Education | 463-9454 |
| James M. Cogdell | Director of Programs, Trade and Industrial Education | 463-9688 |
| Robert K. Gordon | Director of Programs, Vocational Office Education | 463-9692 |
| Neil E. Ballard | Director of Programs, Industrial Technology Education | 463-9474 |
| Sylvia Clark | Director of Programs, Vocational Guidance and Counseling | 463-9443 |

# Appendix C

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Recycled Paper

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# Appendix D

## *Miscellaneous*

# 3 arrested after bomb threat forces hotel guests int[illegible] rain

**By Tim Lott**
American-Statesman Staff

Three men were arrested Thursday night after a bomb scare at the Austin Marriott At The Capitol forced some 500 guests in business suits and pajamas into a steady drizzle.

Several witnesses said one of the men yelled, "Tax man! IRS! I am Allah!" as police led him away.

The "bomb" turned out to be a briefcase filled with paper, said Austin police Lt. David Parkinson. Parkinson did not release the names of the suspects, but said all the men were age 40 to 45 and listed Austin addresses.

Their motive was not known, Parkinson said.

Hal Ohlendorf and Joe Linsalata, buddies from Austin, were minding their own business in the bar, drinking ale and watching the professional basketball game between the San Antonio Spurs and the Houston Rockets.

"The Spurs were up by 10, I think, at halftime," Ohlendorf said. "Next thing you know, the fire alarm goes off and we clear the place. The bar was packed — looked like a couple of hundred people. Maybe because everyone was drinking alcohol, everyone was calm."

Parkin[illegible] said the hotel at 7[illegible] E. 11th St[illegible] ceived a bomb thre[illegible] at about [illegible] p.m. from someo[illegible] who said [illegible] thing about a bo[illegible] on the 10[illegible] floor.

"The h[illegible] security people w[illegible] to the 10[illegible] floor, and they fou[illegible]

See 3 arrested,

# 3 arrested in Marriott bomb scare

**Continued from B1.**

(one suspect) in the hallway," he said. "As they approached him, he held (a briefcase) up and declared he had a bomb."

Parkinson said the hotel security officers backed away from him and called police. The security officers talked with the man, and as he stepped away from the briefcase, they grabbed him, Parkinson said.

Several witnesses said they had seen that suspect enter the building at about 7:45 p.m. wearing a brown suit and vest, but no shirt.

"When the police brought him out, he was yelling, 'Tax man! IRS! I am Allah!'" said guest Timothy Kelly, who was on a business trip from Castroville. Kelly and his business associates did not see the other suspects.

Parkinson said the other two were arrested running from the hotel as police arrived.

Meanwhile, guests milled around in the rain on barricaded 11th Street and on Red River Street, awaiting the bomb squad. Just after 10 p.m. the disposal experts arrived, examined the briefcase and found it to be filled with paper, freeing everyone to return to their rooms — or the bar.

Hal and Joe took their same stools and ordered the same beer. But the game had ended.

A bomb threat interrupted the workshop.

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